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ABSTRACT

This volume provides documentation and selected data for the exercises used by the National Assessment of Educational Progress (NAEP) in nationwide surveys to measure changes in science achievement of young Americans at four age levels: 9-year-olds, 13-year-olds, 17-year-olds, and adults ages 26-35. The exercise documentation includes a copy of the complete exercise, cross-reference identification numbers, the objectives an exercise measured, timing information, and description of the exercise by format, scoring requirements, and administration mode. (MH)

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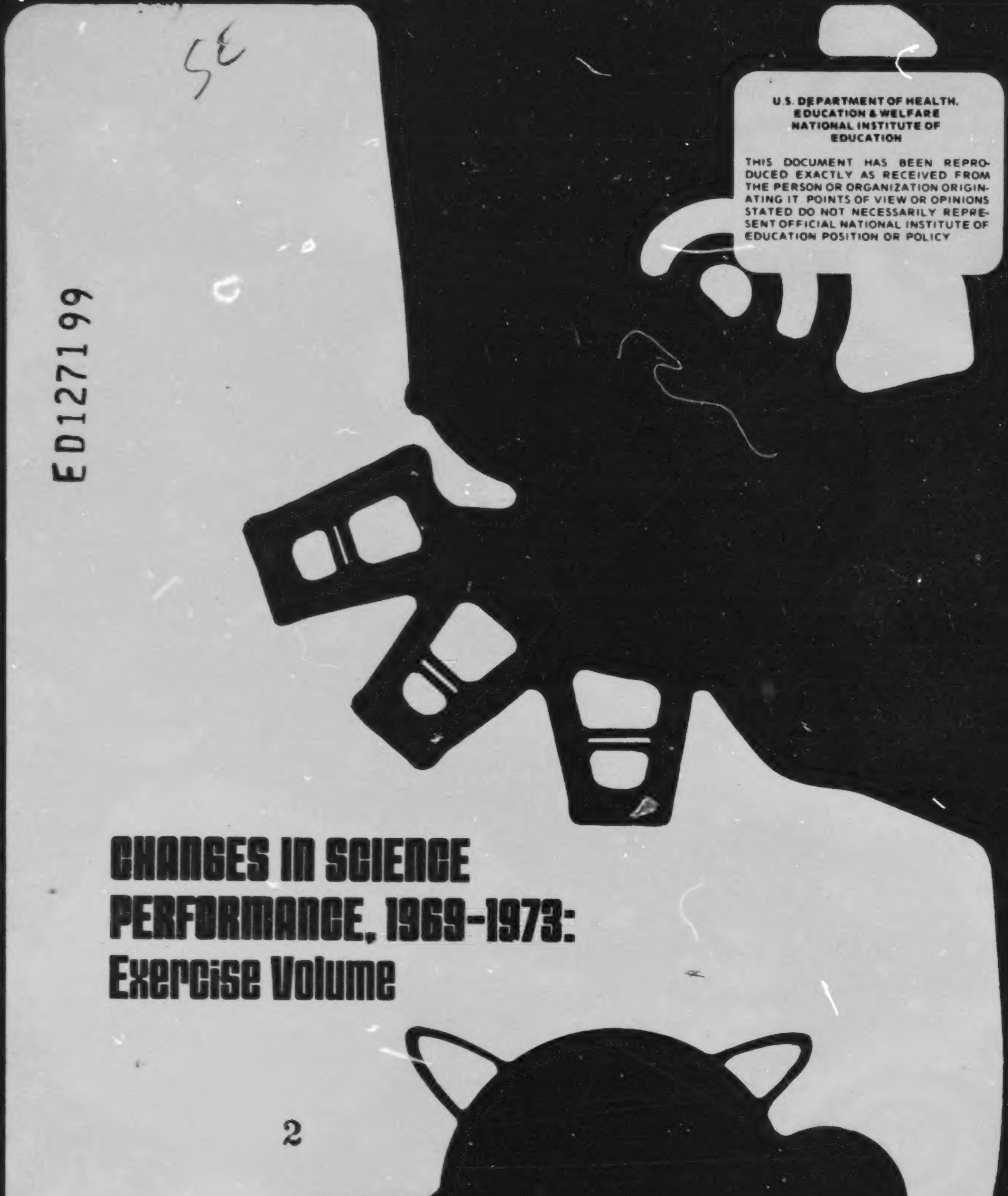

CHANGES IN SCIENCE PERFORMANCE, 1969-1973:
Exercise Volume

SE 021 246

NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS
A Project of the Education Commission of the States

Arch A. Moore Jr., Governor of West Virginia, Chairman, Education Commission of the States
Wendell H. Pierce, Executive Director, Education Commission of the States
Roy Forbes, Director, National Assessment

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1969–70 Assessment

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2	National Results, November 1970	1.70
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1972–73 Assessment

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1973–74 Assessment

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NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS
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NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

CHANGES IN SCIENCE PERFORMANCE, 1969-1973:

Exercise Volume

Science Report No. 04-S-20

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NATIONAL ASSESSMENT OF EDUCATIONAL PROGRESS

Roy H. Forbes
Director

George H. Johnson
Associate Director

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PREFACE

When the United States Office of Education was founded in 1867, one charge set before its commissioner was to determine the nation's progress in education. Only recently has that century-old charge been addressed in a systematic way. The work is being done by the National Assessment of Educational Progress (NAEP).

Each year since 1969 NAEP has gathered census-like information about levels of educational achievement across the country and reported its findings to the nation. During the first five years of its endeavors, National Assessment has interviewed and tested more than 400,000 representative young Americans. Baseline data on the achievement levels of young Americans in eight learning areas -- science, social studies, music, literature, reading, writing, mathematics and citizenship -- have been collected and reported.

Each assessment is the product of several years work by a great many educators, scholars and lay persons from all over the country. Initially, these people design objectives for each area, proposing general goals that they feel Americans should be achieving in the course of their education. These goals are reviewed by more people and then passed along to developers of tests, whose task it is to create measurement tools appropriate to the objectives.

When the exercises prepared by the test developers have passed extensive reviews by subject-matter specialists and measurement experts, they are administered to probability samples of various populations. The people who compose those samples are chosen in such a way that the results of their assessment can be generalized to an entire national population. That is, on the basis of the performance of about 2,500 9-year-olds on a given exercise, we can generalize about the probable performance of all 9-year-olds in the nation. Approximately 100,000 persons participate annually.

After assessment data have been collected, scored and analyzed, National Assessment publishes reports to present the results as accurately as possible. Not all exercise results are released for publication. Because National Assessment will administer some of the same exercises again in the future to determine whether the performance level of Americans has improved or declined, it is essential that they be kept secret in order to preserve the integrity of the study. Approximately one-third of the repeated exercises were retained for use in the third cycle of science assessment and, therefore, are not printed here. Five of these released, repeated exercises required written responses that had to be specially scored and analyzed. These data do not appear in this volume.

This volume provides documentation and selected data for the exercises measuring change in science achievement that have now been released. The exercise documentation includes a copy of the complete exercise, cross-reference identification numbers, the objectives an exercise measured, timing information and descri[illegible]n of the exercise by format, scoring requirements and administration mo[illegible] Researchers who need detailed information and state and local school districts that want to use individual NAEP exercises in their own assessment programs will find this documentation most useful. A brief general summary of the results can be found in *National Assessments of Science, 1969 and 1973: A Capsule Description of Changes in Science Achievement,* *Science, Report 04-S-00*, 1972-73 Assessment (Washington, D.C.: Government Printing Office, 1975).

National Assessment also publishes a general information yearbook that describes all major aspects of the assessment process. This volume defines the categories by which results are reported and elaborates on the scientific procedures utilized. The reader who desires more detailed information about how National Assessment defines its groups, prepares and scores its exercises, designs its sample and analyzes and reports its results should consult *General Information Yearbook, Report 03/04-GIY*, which is available, as are all NAEP reports, through the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402.

INTRODUCTION

In the first National Assessment of Educational Progress (NAEP) study in 1969-70, 9-year-olds, 13-year-olds and 17-year-olds attending school (age levels that mark the end of primary, intermediate and secondary education) were asked a variety of questions designed to measure achievement of four broad educational objectives in science. These objectives were (1) that Americans should know some fundamental facts and principles of science; (2) that they should possess some abilities and skills needed to engage in the process of science; (3) that they should understand the investigative nature of science; and (4) that they should have some attitudes about science and appreciate its role in the culture. Approximately one-half of the questions asked in 1969-70 were repeated in 1972-73. Using the same exercises again in a controlled manner, National Assessment was able to measure the increase or decline in attainment between the two science assessments. This volume provides documentation and selected data for the released exercises measuring change in science achievement.

Several types of information are produced on each exercise documentation page, as illustrated below.

SAMPLE DOCUMENTATION PAGE

I. EXERCISE IDENTIFICATION SYSTEMS

72-73 Rpt. #: RP104

The 1972-73 identification system for all exercises released after the second assessment begins with an "R."

RP104

The second letter designates the type of science being assessed: physical (P), biological (B) or unclassified (U).

RP104

The three numbers are simply a sequence number.

69-70 Rpt. #:   U632, U708

The 1969-70 identification system follows the same general pattern. However, in most cases the exercises were unreleased and the identifier begins with a "U." A few exercises which were released after the first assessment were then repeated in the second assessment. Therefore, in a few instances the 1969-70 identifier begins with an "R." In the first assessment, report numbers were assigned by age level. Exercises, like the sample used here, that were administered at two age levels, had two report numbers.

NAEP #:   101069

The NAEP number serves as a cross-reference and is used more than other identifiers by the NAEP staff. The 1972-73 objective and subobjective are coded in the first and third digits from the left in the NAEP number. In this volume, exercises are ordered by NAEP number and, therefore, by 1972-73 objective and subobjective.

II. OBJECTIVES AND SUBOBJECTIVES

72-73 Objective:	*I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.*
Subobjective:	*A. Know facts and simple concepts.*
69-70 Objective:	*I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.*

Each exercise was written to measure one of the 1969-70 objectives. Once the objectives were revised for the 1972-73 assessment, the repeated exercises were matched with the new objectives and subobjectives. Subobjectives were not assigned to exercises in 1969-70. Booklets describing the two sets of objectives and their development are available from the U.S. Government Printing Office.

III. ADMINISTRATION AND SCORING DESCRIPTORS

Exercise Type: *Multiple choice*

Most of the exercises presented in this volume are multiple-choice questions; a few have, in addition, a short-answer part.

Scoring Type: *Machine*

The multiple-choice exercises were scored by machine, an optical scanner. The open-ended questions were scored by hand by a staff of specially trained personnel.

Administration Mode: *Group*

Most of the exercises in this report were administered to groups of respondents. Others were administered individually, that is, one at a time, to respondents.

It should be noted that the administration and scoring characteristics of the exercises in this volume are not representative of the entire pool of exercises used in 1972-73. Many of the new exercises had open-ended parts which had to be scored by hand. Several were administered to respondents one at a time. However, most of these exercises were not repeated from the first assessment; they were newly developed for the second and will be reported some time in the future.

IV. PACKAGING INFORMATION

Age	*9*	*13*
72-73 Package-Exercise:	*03-05*	*04-33*
69-70 Package-Exercise:	*02-06*	*07-03*

This information tells how exercises were grouped into booklets or packages for each administration. Each respondent took only one package of exercises.

V. ADMINISTRATION TIMES

Timing: (in seconds)			
RP104	*Stimulus:*	*9*	*9*
RP104	*Response:*	*40*	*11*
RP104	*Grand Total:*	*60*	*31*

Those researchers planning to reassess the National Assessment exercises will need to know their exact administration times. The tape recordings used in each group administration were timed in order to arrive at the figures presented in this report. The *stimulus* time is the time required to read on the tape the entire exercise including the alternative responses. The *response* time is the period of silence on the tape allowed for respondents to record their answers. The *grand total* is the total elapsed time required to administer an exercise. The total time is almost always greater than the sum of the stimulus and response times. After the response time, in multiple-choice parts of exercises, there is a five-second interval during which respondents are told "If you do not know the answer, please fill in the oval beside 'I don't know.'" After that, there is a six-second pause before the announcer goes on to the next exercise.

On open-ended exercises, much longer response times were used to allow respondents ample time to respond to the exercise.

SAMPLE EXERCISE PAGE

I. COMPLETE EXERCISE

Each year the Earth moves once around

○ Mars.

○ Venus.

● the Sun.

○ the Moon.

○ all of the other planets.

○ I don't know.

This is a copy of the exercise (NAEP #101069) as it appeared to the respondents. Each exercise was on a separate page in a package.

II. PERCENTAGE OF RESPONDENTS CHOOSING EACH RESPONSE

	AGE 9		AGE 13	
RESP	1970	1973	1969	1972
1	2.5	2.0	0.8	1.4
2	2.2	1.8	0.9	1.0
3*	66.5	66.7	82.5	75.5
4	17.9	16.6	9.3	10.3
5	6.5	8.3	3.6	4.8
IDK	4.1	4.5	2.7	4.5

These data tell us, first, that the exercise was given to both 9 and 13-year-olds in both science assessments. The table gives the percent of students at each age level choosing each of the alternative responses. The responses (under the heading "RESP") are numbered to correspond to the order in which they appear in the exercise. In this example, "Mars" is response 1; "Venus," 2; and so forth. The correct response is indicated by an asterisk. "IDK" denotes the "I don't know" response. From this table we see that in 1969 82.5% of the 13-year-olds correctly said each year the Earth moves once around the Sun. That percentage dropped to 75.5% in 1972. We can also note that the second most popular response, "the Moon," attracted more 9 than 13-year-olds.

The dates in the tables refer to the years in which each age level was assessed. The actual administration dates were:

9-year-olds	Jan.-Feb. 1970	Jan.-Feb. 1973
13-year-olds	Oct.-Dec. 1969	Oct.-Dec. 1972
17-year-olds	March-May 1969	March-May 1973

III. SELECTED GROUP DATA

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	3.8	-10.9	3.5	0.8	2.4	-2.8	-24.3	4.6
	1973	7.6	-5.4	-3.1	1.2	3.7	-3.9	-25.8	5.5
13	1969	4.5	-6.5	2.5	-2.8	2.8	-2.6	-17.1	3.3
	1972	7.1	-3.7	2.4	-6.7	3.1	-3.3	-18.3	4.5

Selected group data on the percent responding correctly to each exercise are also presented. Data are presented for the following groups:

Region	NE	Northeast
	SE	Southeast
	C	Central
	W	West
Sex	M	Male
	F	Female
Color	B	Black
	W	White

Each number in these tables is a group difference, the difference between the percent responding correctly in each group and in the nation. A negative difference means the group is performing below the national level; a positive difference means it is above. For example, in 1970 Southeastern 9-year-olds answered this exercise correctly 10.9% less often than the nation as a whole. In 1973, Southeastern 9-year-olds were correct 5.4% less often than the nation. Although they are still below the national level, this group improved its standing relative to the nation.

Definitions of the groups can be found in the *General Information Yearbook, Report 03/04-GIY*.

EXERCISES AND DOCUMENTATION

72-73 Rpt. #: RB101
69-70 Rpt. #: U607

NAEP #: 101064

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

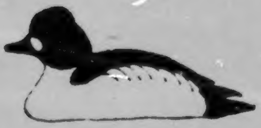
Age: 9
72-73 Package-Exercise: 03-10
69-70 Package-Exercise: 01-02

Timing: (in seconds)
RB101 Stimulus: 9
RB101 Response: 41
RB101 Grand total: 61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.8	-8.4	2.2	0.9	2.6	-3.0	-19.8	3.7
	1973	0.1	-6.6	2.6	2.8	2.1	-2.2	-15.5	3.0

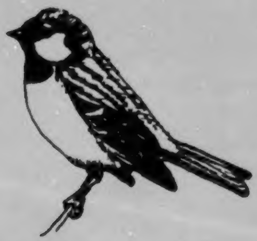
Which of these birds CANNOT fly?

A



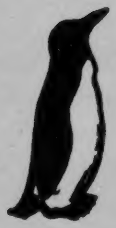
Duck

B



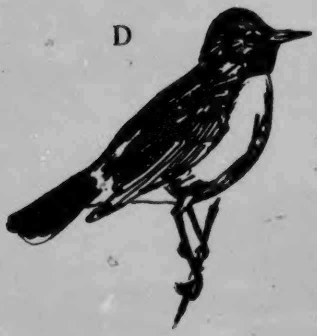
Sparrow

C



Penguin

D



Robin

○ A

○ B

● C

○ D

○ I don't know.

	AGE 9	
RESP	1970	1973
1	5.1	4.4
2	0.5	0.3
3*	92.0	91.6
4	0.6	0.5
IDK	0.4	0.2

72-73 Rpt. #: RP102
69-70 Rpt. #: U648

NAEP #: 101067

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-07
69-70 Package-Exercise: 01-13

Timing: (in seconds)
RP102 Stimulus: 7
RP102 Response: 42
RP102 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	7.0	-6.2	0.4	-3.2	3.0	-3.4	-12.8	3.1
	1973	8.5	-5.5	-3.1	-0.0	3.0	-3.0	-17.7	4.5

Chemistry is often called the study of

○ animals.

● matter.

○ plants.

○ soil.

○ I don't know.

AGE 9

RESP	1970	1973
1	11.2	9.5
2*	37.6	41.0
3	15.6	18.8
4	21.2	16.3
IDK	14.2	14.1

72-73 Rpt. #: RB103
69-70 Rpt. #: R134

NAEP #: 101068

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-27
69-70 Package-Exercise:	02-04

Timing: (in seconds)

RB103	Stimulus:	10
RB103	Response:	39
RB103	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-3.4	-2.2	2.6	2.4	1.8	-2.1	-10.5	2.0
	1973	-7.0	6.3	2.1	-1.0	3.9	-3.8	-15.5	4.0

Which of the following insects spread serious human diseases?

○ Ants

○ Honeybees

● Houseflies

○ Moths

○ I don't know.

	AGE 9	
RESP	1970	1973
1	4.8	6.1
2	17.9	21.4
3*	46.0	45.5
4	21.2	20.4
IDK	9.8	6.2

72-73 Rpt. #: RP104
69-70 Rpt. #: U632, U708

NAEP #: 101069

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	03-05	04-33
69-70 Package-Exercise:	02-06	07-03

Timing: (in seconds)

RP104	Stimulus:	9	9
RP104	Response:	40	11
RP104	Grand total:	60	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	3.8	-10.9	3.5	0.8	2.4	-2.8	-24.3	4.6
	1973	7.6	-5.4	-3.1	1.2	3.7	-3.9	-25.8	5.5
13	1969	4.5	-6.5	2.5	-2.8	2.8	-2.6	-17.1	3.3
	1972	7.1	-3.7	2.4	-6.7	3.1	-3.3	-18.3	4.5

Each year the Earth moves once around

○ Mars.

○ Venus.

● the Sun.

○ the Moon.

○ all of the other planets.

○ I don't know.

	AGE 9		AGE 13	
RESP	1970	1973	1969	1972
1	2.5	2.0	0.8	1.4
2	2.2	1.8	0.9	1.0
3*	66.5	66.7	82.5	75.5
4	17.9	16.6	9.3	10.3
5	6.5	8.3	3.6	4.8
IDK	4.1	4.5	2.7	4.5

72-73 Rpt. #: RB105
69-70 Rpt. #: U628

NAEP #: 101070

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-12
69-70 Package-Exercise:	02-16

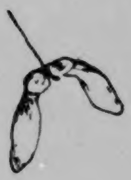
Timing: (in seconds)

RB105	Stimulus:	15
RB105	Response:	35
RB105	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.4	-2.6	4.5	-5.6	1.4	-1.6	-8.8	2.1
	1973	-3.5	-7.1	8.9	1.4	1.4	-1.4	-17.0	3.9

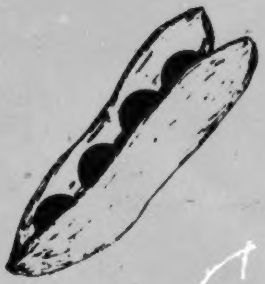
Sometimes seeds stick to animals and are carried to new places where they will later grow. Which of these seeds would most likely be spread this way?

A.



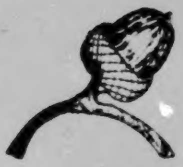
Maple Seed

B.



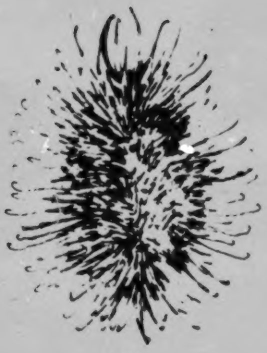
Bean Pod

C.



Acorn

D.



Cocklebur

○ A

○ B

○ C

● D

○ I don't know.

	AGE 9	
RESP	1970	1973
1	9.8	12.7
2	9.4	12.8
3	7.5	9.4
4*	69.5	61.9
IDK	3.6	2.7

72-73 Rpt. #:	RP106
69-70 Rpt. #:	U603
NAEP #:	101071
72-73 Obj:	I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective:	A. Know facts and simple concepts.
69-70 Obj:	I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	06-06
69-70 Package-Exercise:	03-01

Timing: (in seconds)

RP106	Stimulus:	6
RP106	Response:	67
RP106	Grand total:	84

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.3	-5.9	1.0	0.8	-0.4	0.4	-12.9	2.6
	1973	1.4	-2.9	0.7	0.8	0.8	-0.8	-7.3	1.7

Which of the following is hottest?

- ○ Earth
- ○ Mars
- ○ The Moon
- ● The Sun

- ○ I don't know.

AGE 9

RESP	1970	1973
1	0.7	1.1
2	1.1	1.5
3	1.2	1.3
4*	95.1	95.4
IDK	1.5	0.7

72-73 Rpt. #: RP107
69-70 Rpt. #: U646

NAEP #: 101072

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	03-15
69-70 Package-Exercise:	03-03

Timing: (in seconds)

RP107	Stimulus:	9
RP107	Response:	40
RP107	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	7.6	-11.9	-0.0	1.4	0.2	-0.2	-11.0	1.8
	1973	3.0	-5.4	0.9	1.0	2.4	-2.6	-11.0	1.7

Physics is the study of

○ war and peace.
○ wood and cloth.
● energy and matter.
○ plants and animals.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	16.0	10.8
2	4.1	3.1
3*	38.6	37.8
4	16.3	29.4
IDK	24.8	18.7

72-73 Rpt. #: RP108
69-70 Rpt. #: U635

NAEP #: 101073

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-25
69-70 Package-Exercise:	03-04

Timing: (in seconds)

RP108	Stimulus:	9
RP108	Response:	40
RP108	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-8.6	-9.0	8.7	4.8	0.8	-0.8	-13.6	3.1
	1973	-3.2	-6.3	2.4	7.5	2.1	-2.1	-12.3	3.3

The tiny grains of sand on the beach are

● pieces of rock.

○ drops of water.

○ crystals of salt.

○ splinters of wood.

○ I don't know.

AGE 9

RESP	1970	1973
1*	61.9	53.9
2	3.9	3.7
3	28.5	35.7
4	2.1	3.5
IDK	3.4	3.1

72-73 Rpt. #: RP109
69-70 Rpt. #: U609

NAEP #: 101074

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	06-17
69-70 Package-Exercise:	03-12

Timing: (in seconds)

RP109	Stimulus:	10
RP109	Response:	39
RP109	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.6	-7.6	1.3	1.6	-0.3	0.3	-22.3	4.3
	1973	0.5	-4.3	3.0	0.4	0.8	-0.9	-17.6	4.6

You could measure the distance from your home to the school in yards or in

○ dozens.

● feet.

○ pounds.

○ quarts.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	3.9	4.8
2*	89.1	85.6
3	2.4	2.2
4	2.3	2.9
IDK	2.2	4.2

72-73 Rpt. #: RP110
69-70 Rpt. #: U616

NAEP #: 101076

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	03-31
69-70 Package-Exercise:	03-16

Timing: (in seconds)

RP110	Stimulus:	10
RP110	Response:	40
RP110	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	5.8	-14.2	4.2	-0.1	-3.0	3.1	-31.0	6.8
	1973	5.7	-8.1	1.8	-0.2	-1.9	2.0	-28.5	6.4

Electricity can be used for all of the following EXCEPT

● taking walks.

○ cooking food.

○ heating homes.

○ lighting rooms.

○ I don't know.

AGE 9

RESP	1970	1973
1*	80.3	76.6
2	5.3	4.2
3	3.7	4.3
4	9.0	11.0
IDK	1.4	3.4

72-73 Rpt. #: RP111
69-70 Rpt. #: U636

NAEP #: 101077

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 03-28
69-70 Package-Exercise: 03-17

Timing: (in seconds)
RP111 Stimulus: 9
RP111 Response: 41
RP111 Grand total: 61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	0.5	-6.4	-0.5	5.0	1.9	-1.9	-20.1	3.3
	1973	4.8	-2.5	-0.7	-1.4	0.3	-0.3	-17.0	3.2

Putting sand and salt together makes

○ a chemical.
○ a compound.
○ an element.
● a mixture.
○ a solution.

○ I don't know.

AGE 9

RESP	1970	1973
1	10.6	8.1
2	8.4	6.8
3	4.1	3.3
4*	61.5	61.7
5	6.7	9.8
IDK	8.5	10.3

72-73 Rpt. #: RB112
69-70 Rpt. #: U610

NAEP #: 101078

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	03-19
69-70 Package-Exercise:	04-01

Timing: (in seconds)

RB112	Stimulus:	7
RB112	Response:	43
RB112	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.7	-1.6	-2.9	3.1	0.9	-0.9	-6.5	1.2
	1973	-2.1	-0.1	-0.3	2.4	1.2	-1.3	-7.1	1.6

Which animal eats only plants?

○ Cat

○ Dog

○ Lion

● Rabbit

○ I don't know.

	AGE 9	
RESP	1970	1973
1	0.2	0.2
2	0.5	0.3
3	8.1	5.5
4*	87.7	92.7
IDK	3.0	1.2

72-73 Rpt. #: RB113
69-70 Rpt. #: U641

NAEP #: 101079

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	03-23
69-70 Package-Exercise:	04-04

Timing: (in seconds)

RB113	Stimulus:	14
RB113	Response:	36
RB113	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	0.2	-2.7	-1.6	3.8	0.1	-0.1	-10.0	3.0
	1973	-1.3	0.0	2.1	-1.1	0.6	-0.7	-1.7	0.6

Germs sometimes cause disease in man because germs

● make poisons.

○ keep the blood from moving.

○ use up all of the water in the body.

○ dislike people and want to hurt them.

○ I don't know.

AGE 9

RESP	1970	1973
1*	49.2	47.6
2	17.4	20.7
3	6.9	10.5
4	13.6	13.1
IDK	12.8	7.9

72-73 Rpt. #: RB114
69-70 Rpt. #: U615

NAEP #: 101081

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	05-02
69-70 Package-Exercise:	04-09

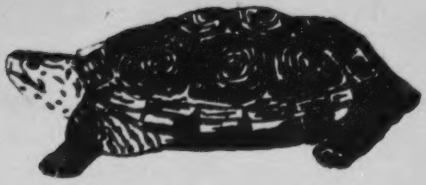
Timing: (in seconds)

RB114	Stimulus:	9
RB114	Response:	40
RB114	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	0.0	-2.3	2.6	-1.5	2.0	-1.9	-10.6	3.2
	1973	-2.8	-3.2	6.0	-0.3	1.7	-1.7	-12.5	4.8

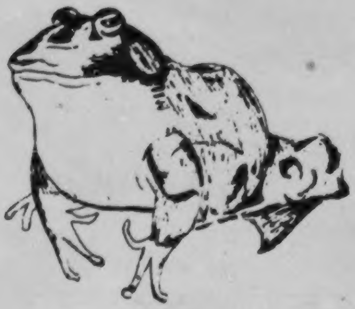
Which of the following animals has scales over most of its body?

A



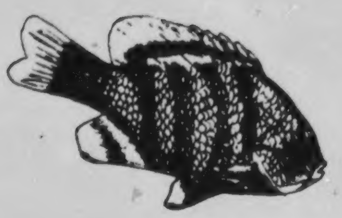
Turtle

B



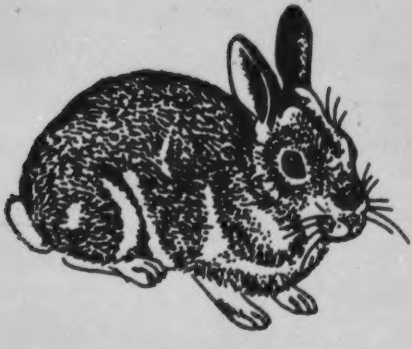
Frog

C



Fish

D



Rabbit

○ A

○ B

● C

○ D

○ I don't know.

AGE 9

RESP	1970	1973
1	11.0	10.6
2	3.8	3.7
3*	80.9	75.7
4	2.5	4.2
IDK	1.5	2.5

72-73 Rpt. #: RB115
69-70 Rpt. #: U611

NAEP #: 101083

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-20
69-70 Package-Exercise:	05-01

Timing: (in seconds)

RB115	Stimulus:	9
RB115	Response:	40
RB115	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.0	-7.0	3.3	0.0	0.8	-0.8	-24.3	4.6
	1973	2.1	-6.3	2.4	1.4	1.9	-1.8	-20.9	4.4

Which of the following animals usually hunts for food only at night?

● Bat

○ Dog

○ Horse

○ Hummingbird

○ I don't know.

AGE 9

RESP	1970	1973
1*	87.2	86.9
2	3.6	3.7
3	0.8	0.5
4	5.0	6.7
IDK	2.9	1.8

72-73 Rpt. #: RB116
69-70 Rpt. #: U655

NAEP #: 101085

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	07-14
69-70 Package-Exercise:	05-14

Timing: (in seconds)

RB116	Stimulus:	14
RB116	Response:	35
RB116	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-0.7	-0.6	-0.7	2.3	1.0	-1.0	2.4	-0.3
	1973	-0.3	2.5	-4.8	3.9	3.1	-3.1	1.3	0.0

What is the main way that sweating helps your body?

● It helps cool your body.

○ It keeps your skin moist.

○ It keeps you from catching cold.

○ It gets rid of the salt in your body.

○ I don't know.

	AGE 9	
RESP	1970	1973
1*	14.5	15.5
2	34.8	30.2
3	12.0	11.5
4	30.0	35.1
IDK	8.6	7.6

72-73 Rpt. #: RP117
69-70 Rpt. #: U657

NAEP #: 101087

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-29
69-70 Package-Exercise: 06-05

Timing: (in seconds)
RP117 Stimulus: 9
RP117 Response: 40
RP117 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.5	-2.3	1.1	-1.9	2.6	-2.7	0.4	-0.2
	1973	2.9	-2.0	-0.6	-0.5	1.5	-1.6	-3.7	0.6

Atoms are NOT a part of

○ compounds.
● electrons.
○ elements.
○ matter.
○ molecules.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	19.5	15.5
2*	11.6	12.5
3	5.8	6.5
4	18.9	18.4
5	15.9	16.4
IDK	27.9	30.3

72-73 Rpt. #: RP118
69-70 Rpt. #: U622
NAEP #: 101091

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-15
69-70 Package-Exercise:	07-01

Timing: (in seconds)

RP118	Stimulus:	10
RP118	Response:	40
RP118	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.2	-5.8	3.0	0.6	-0.7	0.7	-18.9	4.2
	1973	3.4	-7.1	2.6	0.6	0.8	-0.8	-23.4	5.7

Iron is most likely to rust when it is

● damp.
○ dry.
○ painted.
○ covered with soap.
○ covered with grease.

○ I don't know.

	AGE 9	
RESP	1970	1973
1*	75.3	66.3
2	8.3	11.4
3	2.5	3.7
4	3.0	5.9
5	4.6	8.9
IDK	4.9	3.6

72-73 Rpt. #: RP119
69-70 Rpt. #: U619

NAEP #: 101093

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-06
69-70 Package-Exercise: 07-06

Timing: (in seconds)
RP119 Stimulus: 9
RP119 Response: 40
RP119 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	7.0	-12.0	5.1	-2.3	-3.0	3.2	-20.0	4.5
	1973	8.3	-14.8	6.5	-2.2	-0.2	0.2	-29.7	6.2

Water falls from the sky as all of the following EXCEPT

○ hail.

○ rain.

● smoke.

○ snow.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	3.6	3.2
2	12.7	17.7
3*	77.8	74.2
4	3.4	3.0
IDK	1.9	1.4

72-73 Rpt. #: RB120
69-70 Rpt. #: U601

NAEP #: 101094

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 04-02
69-70 Package-Exercise: 07-12

Timing: (in seconds)

RB120	Stimulus:	7
RB120	Response:	42
RB120	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.2	-1.5	-0.4	0.7	-0.2	0.2	-7.0	1.1
	1973	-1.7	0.6	0.3	0.7	-0.7	0.7	-9.2	1.9

Which of the following animals do NOT lay eggs?

○ Chickens

● Dogs

○ Frogs

○ Turtles

○ I don't know.

AGE 9

RESP	1970	1973
1	1.2	1.7
2*	95.8	90.4
3	1.0	1.3
4	1.0	1.1
IDK	0.4	1.0

72-73 Rpt. #: RP121
69-70 Rpt. #: U605

NAEP #: 101096

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	06-33
69-70 Package-Exercise:	08-01

Timing: (in seconds)

RP121	Stimulus:	8
RP121	Response:	41
RP121	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.6	-1.2	2.2	-3.3	1.0	-1.0	-11.7	2.8
	1973	0.4	-2.2	1.5	0.1	0.9	-0.9	-15.6	4.4

Which of the following can be weighed on a scale?

- ● Fish
- ○ Freedom
- ○ Friendship
- ○ Fun

- ○ I don't know.

AGE 9

RESP	1970	1973
1*	92.9	89.2
2	1.2	2.2
3	2.3	4.1
4	0.2	1.9
IDK	2.9	2.5

72-73 Rpt. #: RP122
69-70 Rpt. #: U624, U703

NAEP #: 101097

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	04-22	02-14
69-70 Package-Exercise:	08-02	04-14

Timing: (in seconds)

RP122	Stimulus:	10	11
RP122	Response:	39	9
RP122	Grand total:	60	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-2.2	-10.6	5.4	6.0	3.6	-3.6	-28.4	4.7
	1973	1.0	-8.9	2.2	5.3	2.1	-2.0	-19.3	4.1
13	1969	-0.6	-2.8	2.8	0.2	0.7	-0.5	-10.0	2.2
	1972	-0.6	-1.6	0.7	1.3	-1.1	1.0	-13.4	2.6

How many stars are there in the universe?

○ 12

○ 893

○ About a million

● More than have been counted

○ I don't know.

	AGE 9		AGE 13	
RESP	1970	1973	1969	1972
1	1.4	1.7	0.3	0.4
2	3.6	3.8	0.5	0.4
3	10.5	12.6	2.8	3.6
4*	73.9	75.6	93.7	89.9
IDK	10.3	6.1	2.5	5.5

72-73 Rpt. #:	RP123
69-70 Rpt. #:	U639
NAEP #:	101099

72-73 Obj:	I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective:	A. Know facts and simple concepts.
69-70 Obj:	I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	02-04
69-70 Package-Exercise:	08-05

Timing: (in seconds)

RP123	Stimulus:	8
RP123	Response:	41
RP123	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-0.0	-1.8	-0.8	2.6	4.4	-4.4	-25.1	4.6
	1973	3.2	-5.1	2.4	-1.2	4.7	-4.6	-16.7	3.3

Most of the Earth's surface is

○ cities and towns.

○ farm land.

○ solid rock.

● water.

○ yellow.

○ I don't know.

AGE 9

RESP	1970	1973
1	21.7	26.3
2	4.4	6.2
3	13.0	13.2
4*	54.4	41.2
5	1.0	1.5
IDK	5.4	11.0

72-73 Rpt. #: RB124
69-70 Rpt. #: U647

NAEP #: 101100

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-32
69-70 Package-Exercise:	08-08

Timing: (in seconds)

RB124	Stimulus:	13
RB124	Response:	38
RB124	Grand total:	62

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	0.6	-7.6	-1.1	7.7	3.2	-3.2	-14.0	2.0
	1973	2.2	-4.7	1.5	0.8	4.3	-4.1	-5.5	1.0

The bones and shells of sea animals that lived millions of years ago can be found in the

○ ocean water.

○ ice on a pond.

○ trunks of trees.

● rocks in the ground.

○ I don't know.

AGE 9

RESP	1970	1973
1	58.4	54.0
2	0.8	1.3
3	1.4	1.8
4*	36.8	38.7
IDK	2.6	3.3

72-73 Rpt. #: RB125
69-70 Rpt. #: U718

NAEP #: 101102

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 02-11
69-70 Package-Exercise: 01-04

Timing: (in seconds)
RB125 Stimulus: 12
RB125 Response: 8
RB125 Grand total: 32

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-3.2	2.4	7.1	-6.6	0.8	-0.7	-20.3	5.3
	1972	3.2	-1.7	2.2	-4.0	0.9	-0.9	-20.6	4.9

Green plants make sugar by the process called

○ digestion.

○ evaporation.

○ osmosis.

● photosynthesis.

○ respiration.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	5.2	5.4
2	5.6	6.7
3	10.0	9.5
4*	61.7	62.0
5	3.5	4.9
IDK	13.9	11.4

72-73 Rpt. #: RB126
69-70 Rpt. #: U727

NAEP #: 101103

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 02-18
69-70 Package-Exercise: 02-02

Timing: (in seconds)
RB126 Stimulus: 15
RB126 Response: 20
RB126 Grand total: 46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	2.3	-3.5	-1.0	1.6	0.0	0.2	-26.6	4.7
	1972	2.0	-4.6	3.3	-1.5	2.4	-2.3	-23.4	5.1

An average serving of which of the following foods would provide the most protein for building and repairing body tissues?

○ Boiled potatoes
○ Green beans
● Lean meat
○ Oatmeal
○ White bread

○ I don't know.

	AGE 13	
RESP	1969	1972
1	4.8	4.6
2	15.1	20.5
3*	53.2	49.3
4	7.2	7.9
5	11.0	7.8
IDK	8.2	9.4

72-73 Rpt. #: RB127
69-70 Rpt. #: U711

NAEP #: 101105

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	04-05
69-70 Package-Exercise:	03-08

Timing: (in seconds)

RB127	Stimulus:	12
RB127	Response:	22
RB127	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	5.7	0.4	1.2	-8.4	1.7	-1.6	-11.4	2.6
	1972	2.6	0.6	-1.6	-1.3	1.6	-1.7	-14.6	3.6

When a person sees something, what carries the message from the eyes to the brain?

○ Arteries

○ Glands

○ Muscles

● Nerves

○ Veins

○ I don't know.

	AGE 13	
RESP	1969	1972
1	7.8	6.2
2	4.6	5.4
3	3.0	2.6
4*	76.9	78.2
5	3.1	3.8
IDK	4.5	3.7

72-73 Rpt. #: RB128
69-70 Rpt. #: U706

NAEP #: 101108

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 08-01
69-70 Package-Exercise: 04-03

Timing: (in seconds)
RB128 Stimulus: 14
RB128 Response: 21
RB128 Grand total: 46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	1.4	-2.9	2.8	-1.7	2.4	-2.1	-9.4	2.6
	1972	3.1	-1.6	1.0	-2.4	2.9	-2.9	-13.1	3.2

What is the most important thing that the lungs do?

○ Hold the chest out

○ Protect against germs

○ Move different parts of the body

○ Pump the blood through the body

● Provide a place for oxygen to enter the blood

○ I don't know.

	AGE 13	
RESP	1969	1972
1	1.1	0.7
2	1.8	1.0
3	1.0	1.2
4	9.2	11.4
5*	85.7	84.2
IDK	1.0	1.5

73

72-73 Rpt. #: RB129
69-70 Rpt. #: U731

NAEP #: 101109

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 09-04
69-70 Package-Exercise: 04-07

Timing: (in seconds)
RB129 Stimulus: 19
RB129 Response: 32
RB129 Grand total: 62

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	2.1	-4.9	3.9	-1.6	3.8	-3.5	-21.8	5.0
	1972	0.8	-6.3	3.4	1.6	5.6	-6.0	-22.3	3.9

Green plants are important to animals because the plants

○ consume both food and oxygen.
○ consume food and give off oxygen.
○ consume food and give off carbon dioxide.
● produce food and give off oxygen.
○ produce food and give off carbon dioxide.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	12.8	10.9
2	11.3	13.9
3	7.0	6.0
4*	49.7	51.1
5	15.1	13.4
IDK	3.9	4.3

72-73 Rpt. #: RP130
69-70 Rpt. #: U710

NAEP #: 101110

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	02-09
69-70 Package-Exercise:	05-03

Timing: (in seconds)

RP130	Stimulus:	13
RP130	Response:	7
RP130	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	0.3	-5.6	1.6	2.6	3.3	-3.1	-11.0	2.6
	1972	3.1	-4.3	1.2	-0.6	1.6	-1.6	-12.1	3.5

What is needed to move cars, heat hamburgers, and light rooms?

○ Conservation
○ Efficiency
● Energy
○ Friction
○ Magnetism

○ I don't know.

AGE 13

RESP	1969	1972
1	1.4	1.2
2	1.9	2.6
3*	79.2	81.6
4	10.8	7.3
5	2.6	3.7
IDK	4.0	3.5

72-73 Rpt. #: RP131
69-70 Rpt. #: U742

NAEP #: 101111

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 08-20
69-70 Package-Exercise: 05-05

Timing: (in seconds)
RP131 Stimulus: 13
RP131 Response: 7
RP131 Grand total: 31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	4.2	-5.5	3.3	-4.1	3.0	-2.8	-18.1	4.2
	1972	6.6	-0.7	-0.2	-5.3	1.4	-1.5	-10.2	2.6

If a neutral atom loses an electron, which of the following is formed?

○ A gas

● An ion

○ An acid

○ A radical

○ A molecule.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	8.6	9.4
2*	28.4	21.8
3	5.0	4.5
4	5.8	6.5
5	29.4	25.8
IDK	22.7	31.8

72-73 Rpt. #: RB132
69-70 Rpt. #: U713

NAEP #: 101114

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	13
72-73 Package-Exercise:	09-19
69-70 Package-Exercise:	06-01

Timing: (in seconds)

RB132	Stimulus:	9
RB132	Response:	11
RB132	Grand total:	32

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	4.7	-8.9	2.9	-0.5	1.6	-1.4	-26.0	4.7
	1972	5.1	-7.1	0.7	1.0	-0.4	0.4	-31.0	4.7

Seeds come from which of the following parts of a plant?

- ○ Bark
- ● Flower
- ○ Leaf
- ○ Root
- ○ Stem

○ I don't know.

	AGE 13	
RESP	1969	1972
1	1.1	1.4
2*	74.4	68.4
3	3.6	5.0
4	11.5	12.8
5	7.5	9.6
IDK	1.6	2.5

72-73 Rpt. #: RB133
69-70 Rpt. #: U743, U820

NAEP #: 101116

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:		13	17
72-73 Package-Exercise:		03-31	11-24
69-70 Package-Exercise:		06-06	07-01
Timing: (in seconds)			
RB133	Stimulus:	19	17
RB133	Response:	16	18
RB133	Grand total:	46	42

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.7	-5.5	1.7	3.7	-0.1	0.1	-15.0	3.2
	1972	8.3	-6.2	2.9	-5.8	0.6	-0.6	-14.1	3.6
17	1969	3.8	-6.9	-3.5	5.3	0.8	-0.8	-31.8	3.5
	1973	-1.2	-6.2	4.1	0.8	-1.0	1.1	-31.6	5.6

Of the following, cancer is best described as

○ a disease of the aged.

○ an inherited disease.

○ a consequence of infection.

● uncontrolled cell division.

○ a disease of the blood which then spreads to other parts of the body.

○ I don't know.

	AGE 13		AGE 17	
RESP	1969	1972	1969	1973
1	2.9	1.7	1.2	0.9
2	6.3	5.6	1.7	1.9
3	16.9	16.5	13.6	15.7
4*	29.0	26.1	61.6	57.1
5	38.7	37.7	18.7	19.4
IDK	6.2	7.7	3.1	3.9

72-73 Rpt. #: RP134
69-70 Rpt. #: U735

NAEP #: 101117

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 09-06
69-70 Package-Exercise: 06-07

Timing: (in seconds)
RP134 Stimulus: 12
RP134 Response: 8
RP134 Grand total: 31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	3.4	-7.6	5.8	-4.2	3.6	-3.1	-17.3	3.9
	1972	7.6	0.1	-1.3	-5.8	6.6	-7.2	-16.6	3.3

What does an electric power company sell in units of kilowatt-hours?

○ Atoms

○ Electrons

● Energy

○ Radiation

○ Time

○ I don't know.

AGE 13

RESP	1969	1972
1	2.1	2.4
2	23.2	22.1
3*	45.5	41.9
4	6.6	5.1
5	6.5	6.8
IDK	15.9	21.5

72-73 Rpt. #: RP135
69-70 Rpt. #: U705

NAEP #: 101118

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-01
69-70 Package-Exercise:	06-08

Timing: (in seconds)

RP135	Stimulus:	9
RP135	Response:	11
RP135	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	1.1	-4.3	1.0	1.6	-1.3	1.2	-10.4	1.9
	1972	3.4	-1.3	-1.0	-0.8	-0.2	0.2	-10.0	1.7

The only star you usually see in the daytime is

- ○ Venus.
- ● the Sun.
- ○ the Moon.
- ○ the Pole Star.
- ○ Alpha Centauri.

- ○ I don't know.

	AGE 13	
RESP	1969	1972
1	1.4	1.8
2*	93.2	93.5
3	1.8	2.1
4	1.5	1.0
5	0.8	0.2
IDK	1.3	1.2

72-73 Rpt. #: RP136
69-70 Rpt. #: U715

NAEP #: 101119

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	06-20
69-70 Package-Exercise:	07-01

Timing: (in seconds)

RP136	Stimulus:	14
RP136	Response:	6
RP136	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	8.2	-4.6	1.1	-6.9	-1.1	0.7	-10.0	3.0
	1972	1.7	-3.9	2.8	-1.4	-2.8	2.6	-24.2	3.9

When one sees a powder made up of both white specks and black specks, one is able to conclude that he has

○ sugar.
○ pepper.
● a mixture.
○ an element.
○ a pure compound.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	0.5	0.9
2	23.1	14.0
3*	69.7	70.0
4	1.6	3.0
5	2.7	7.5
IDK	2.0	4.4

72-73 Rpt. #: RP137
69-70 Rpt. #: U723

NAEP #: 101120

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 03-06
69-70 Package-Exercise: 08-01

Timing: (in seconds)
RP137 Stimulus: 15
RP137 Response: 19
RP137 Grand total: 45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-2.1	-6.2	6.7	-0.4	3.0	-3.4	-23.3	4.4
	1972	4.2	-8.1	0.8	2.0	2.1	-1.9	-20.3	4.2

The time it takes the Moon to go from new moon to full moon and back to new moon is about

- ○ $\frac{1}{2}$ day.
- ○ 1 day.
- ○ 14 days.
- ● 28 days.
- ○ 365 days.

- ○ I don't know.

	AGE 13	
RESP	1969	1972
1	0.8	2.3
2	8.6	7.4
3	16.0	17.1
4*	58.5	50.3
5	8.2	13.4
IDK	7.7	9.5

72-73 Rpt. #: RB138
69-70 Rpt. #: U707

NAEP #: 101122

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 04-23
69-70 Package-Exercise: 08-05

Timing: (in seconds)
RB138 Stimulus: 12
RB138 Response: 9
RB138 Grand total: 32

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	4.1	-4.7	-0.2	-0.4	-1.1	1.1	-25.4	5.1
	1972	6.4	-3.3	2.3	-6.2	-1.6	1.7	-25.8	5.7

Which of the following diseases is known to be transmitted by an insect?

○ Cancer
○ Diabetes
● Malaria
○ Measles
○ Polio

○ I don't know.

AGE 13		
RESP	1969	1972
1	2.0	1.5
2	5.0	5.4
3*	84.6	77.0
4	1.6	2.9
5	3.8	6.9
IDK	2.9	5.6

72-73 Rpt. #: RP139
69-70 Rpt. #: U747, U843

NAEP #: 101123

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:		13	17
72-73 Package-Exercise:		03-21	06-22
69-70 Package-Exercise:		08-06	04-09
Timing: (in seconds)			
RP139	Stimulus:	16	16
RP139	Response:	19	20
RP139	Grand total:	46	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	0.2	0.8	0.6	-1.6	0.3	-0.3	2.0	-0.8
	1972	-0.7	2.4	-1.1	-0.2	1.6	-1.5	7.7	-1.4
17	1969	0.8	-6.0	3.0	-0.2	5.1	-4.8	-4.0	1.0
	1973	1.8	0.4	-2.1	0.2	4.2	-3.8	1.8	-0.2

Which of the following is produced when a candle burns?

○ Carbon atoms in the same crystal form as diamonds

○ Hydrogen gas

○ Nitrogen gas

○ Oxygen gas

● Water vapor

○ I don't know.

	AGE 13		AGE 17	
RESP	1969	1972	1969	1973
1	13.1	11.2	14.3	14.8
2	22.6	23.8	21.8	22.0
3	19.8	19.7	16.6	17.1
4	18.0	18.4	11.4	11.1
5*	8.1	8.0	15.3	10.4
IDK	18.4	18.0	20.4	24.3

72-73 Rpt. #: RP140
69-70 Rpt. #: 0725

NAEP #: 101124

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	02-05
69-70 Package-Exercise:	08-12

Timing: (in seconds)

RP140	Stimulus:	9
RP140	Response:	12
RP140	Grand total:	32

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	0.1	-5.2	1.0	3.0	3.9	-4.4	-16.5	3.3
	1972	3.5	-5.6	0.8	0.7	2.7	-2.6	-18.6	4.8

From which of these can all kinds of matter be formed?

● Atoms
○ Compounds
○ Mixtures
○ Protons

○ I don't know.

AGE 13

RESP	1969	1972
1*	58.2	61.4
2	10.4	12.2
3	18.6	17.2
4	5.5	3.2
IDK	7.2	5.8

72-73 Rpt. #: RB141
69-70 Rpt. #: U720

NAEP #: 101125

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	09-14
69-70 Package-Exercise:	09-02

Timing: (in seconds)

RB141	Stimulus:	12
RB141	Response:	8
RB141	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	2.4	-7.0	1.6	2.0	1.2	-0.8	-22.8	5.7
	1972	-0.5	-3.5	4.4	-0.7	4.7	-5.1	-21.1	4.6

Which of the following have probably been on Earth the shortest time?

○ Alligators

○ Dragonflies

○ Fish

● Men

○ Snails

○ I don't know.

	AGE 13	
RESP	1969	1972
1	4.3	5.8
2	13.6	14.1
3	3.5	2.6
4*	61.6	64.2
5	6.8	7.8
IDK	9.7	5.2

72-73 Rpt. #: RB142
69-70 Rpt. #: U736

NAEP #: 101126

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	04-29
69-70 Package-Exercise:	09-03

Timing: (in seconds)

RB142	Stimulus:	17
RB142	Response:	18
RB142	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	0.3	-10.0	4.7	3.6	-0.3	0.5	-10.6	2.8
	1972	-0.9	1.1	1.4	-1.5	0.6	-0.7	-12.1	3.2

What is the main way that sweating helps your body?

○ It keeps your skin moist.
○ It keeps you from catching cold.
○ It rids your body of extra water.
○ It gets rid of the salt in your body.
● It aids in controlling body temperature.

○ I don't know.

AGE 13

RESP	1969	1972
1	7.0	6.1
2	1.2	2.0
3	17.4	13.9
4	24.4	27.4
5*	44.3	43.4
IDK	5.6	5.0

72-73 Rpt. #: RP143
69-70 Rpt. #: U739

NAEP #: 101128

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 07-28
69-70 Package-Exercise: 09-08

Timing: (in seconds)

RP143	Stimulus:	13
RP143	Response:	7
RP143	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	2.4	-1.6	3.3	-4.6	0.4	-0.5	-10.6	3.4
	1972	2.2	-3.6	3.2	-2.5	0.9	-0.8	-17.5	3.8

Atoms of all the elements have

- ○ the same mass.
- ● nuclei in them.
- ○ the same weights.
- ○ an attraction for electrons.
- ○ the same number of charged particles.

- ○ I don't know.

	AGE 13	
RESP	1969	1972
1	6.7	7.8
2*	38.7	34.8
3	3.7	3.7
4	21.2	16.4
5	12.4	7.1
IDK	17.2	27.9

72-73 Rpt. #: RP144
69-70 Rpt. #: U717

NAEP #: 101129

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	08-05
69-70 Package-Exercise:	09-11

Timing: (in seconds)

RP144	Stimulus:	19
RP144	Response:	15
RP144	Grand total:	45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	7.4	-11.6	1.4	1.0	8.2	-7.9	-27.8	6.3
	1972	6.0	-2.9	4.5	-7.5	7.7	-7.8	-30.5	6.3

Which of the following helps to account for the fact that a compass can be used to find north on Earth?

○ Earth has only one moon.
● Earth has a magnetic field.
○ Earth reflects the Sun's light.
○ Most of Earth is covered by water.
○ Earth's temperature is not constant.

○ I don't know.

AGE 13

RESP	1969	1972
1	7.4	7.2
2*	63.1	62.2
3	8.1	9.1
4	5.7	4.8
5	4.7	3.8
IDK	10.9	12.9

72-73 Rpt. #: RB145
69-70 Rpt. #: U814

NAEP #: 101131

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 01-05
69-70 Package-Exercise: 02-01

Timing: (in seconds)
RB145 Stimulus: 9
RB145 Response: 11
RB145 Grand total: 30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.3	-0.4	-4.3	5.3	2.8	-2.5	-18.5	2.5
	1973	1.7	2.4	-2.1	-1.5	3.9	-3.8	-19.4	3.5

Which of the following animals is a vertebrate?

○ Clam

● Frog

○ Octopus

○ Spider

○ Starfish

○ I don't know.

AGE 17

RESP	1969	1973
1	2.6	2.3
2*	72.4	71.0
3	3.2	3.5
4	4.1	3.7
5	10.6	11.3
IDK	6.6	7.6

72-73 Rpt. #: RB146
69-70 Rpt. #: U804

NAEP #: 101133

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 11-03
69-70 Package-Exercise: 04-01

Timing: (in seconds)
RB146 Stimulus: 8
RB146 Response: 11
RB146 Grand total: 30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	1.4	-3.5	2.2	-1.7	-0.3	0.3	-11.6	2.5
	1973	-1.8	-0.9	4.9	3.5	0.4	-0.4	-10.3	1.9

Which of the following is an animal?

○ Bacterium

● Lizard

○ Moss

○ Snapdragon

○ Toadstool

○ I don't know.

	AGE 17	
RESP	1969	1973
1	5.8	4.7
2*	87.7	85.7
3	0.5	0.3
4	2.1	4.2
5	1.3	2.6
IDK	2.2	2.4

72-73 Rpt. #: RB147
69-70 Rpt. #: U826

NAEP #: 101134

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 03-17
69-70 Package-Exercise: 04-05

Timing: (in seconds)
RB147 Stimulus: 11
RB147 Response: 23
RB147 Grand total: 45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	2.3	-14.0	4.9	1.8	-6.0	5.6	-13.5	2.1
	1973	10.3	-4.4	10.7	-23.5	-8.8	8.9	-13.1	3.5

The human embryo normally develops in the

○ abdominal cavity.

○ ovary.

○ oviduct.

● uterus.

○ vagina.

○ I don't know.

AGE 17

RESP	1969	1973
1	14.9	10.6
2	18.7	13.6
3	4.7	3.6
4*	46.7	52.2
5	7.2	4.4
IDK	7.8	6.9

72-73 Rpt. #: RB148
69-70 Rpt. #: U809

NAEP #: 101135

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	08-15
69-70 Package-Exercise:	05-13

Timing: (in seconds)

RB148	Stimulus:	11
RB148	Response:	23
RB148	Grand total:	45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	7.4	-7.9	2.0	-3.5	-3.0	3.2	-22.3	3.2
	1973	5.6	-3.8	4.1	-7.4	-3.3	3.0	-21.4	4.5

Which of the following is used in the treatment of diabete[illegible]

○ Estrogen

● Insulin

○ Iodine

○ Penicillin

○ Thyroxine

○ I don't know.

	AGE 17	
RESP	1969	1973
1	2.1	0.9
2*	76.8	79.8
3	2.2	0.8
4	6.1	6.9
5	4.7	1.8
IDK	7.8	8.9

72-73 Rpt. #: RP149
69-70 Rpt. #: U847

NAEP #: 101136

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	06-07
69-70 Package-Exercise:	06-02

Timing: (in seconds)

RP149	Stimulus:	15
RP149	Response:	19
RP149	Grand total:	45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.8	-4.1	4.6	-3.8	2.5	-2.4	-5.3	0.8
	1973	0.9	-1.3	-1.0	1.4	3.2	-2.9	-2.2	0.5

The two elements that make up the greatest part of the mass of the Earth's crust are

○ aluminum and iron.
○ iron and copper.
● oxygen and silicon.
○ oxygen and hydrogen.
○ sodium and chlorine.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	6.4	6.8
2	23.0	25.6
3*	13.6	8.4
4	36.3	38.7
5	4.6	2.9
IDK	16.0	17.5

72-73 Rpt. #: RP150
69-70 Rpt. #: U817

NAEP #: 101137

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 09-29
69-70 Package-Exercise: 06-05

Timing: (in seconds)

RP150	Stimulus:	15
RP150	Response:	6
RP150	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	4.8	-5.0	3.6	-6.0	2.5	-2.4	-14.8	1.9
	1973	5.1	2.5	2.7	-11.1	1.6	-1.5	-16.5	4.4

One example of oxidation is the

○ setting of concrete.
● burning of wood in air.
○ neutralizing of an acid.
○ dissolving of CO_2 in water.
○ forming of ice from water.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	1.3	1.6
2*	68.6	56.1
3	4.6	6.1
4	10.8	11.1
5	6.7	7.2
IDK	8.0	16.6

72-73 Rpt. #: RP151
69-70 Rpt. #: U822

NAEP #: 101138

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 11-12
69-70 Package-Exercise: 06-06

Timing: (in seconds)
RP151 Stimulus: 10
RP151 Response: 10
RP151 Grand total: 30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	6.3	-9.2	-1.2	1.2	7.4	-7.2	-16.5	1.1
	1973	7.9	-2.2	-1.4	-4.2	5.7	-6.0	-14.0	2.6

Chemistry is a study principally concerned with the properties of

○ acids.

○ actions.

○ energy.

○ living things.

● matter.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	14.6	17.1
2	7.8	13.2
3	13.5	14.6
4	2.8	4.2
5*	57.9	45.7
IDK	3.3	5.1

72-73 Rpt. #: RP152
69-70 Rpt. #: U816

NAEP #: 101139

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	10-05
69-70 Package-Exercise:	06-09

Timing: (in seconds)

RP152	Stimulus:	9
RP152	Response:	11
RP152	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	4.8	-0.6	-1.3	-2.7	10.1	-9.8	-19.6	2.5
	1973	-3.3	2.1	2.2	-1.0	14.1	-12.8	-10.8	2.9

What device changes the voltage of an electric power supply?

○ Alternator

○ Battery

○ Rectifier

● Transformer

○ I don't know.

AGE 17

RESP	1969	1973
1	17.0	19.7
2	6.2	7.4
3	5.8	3.6
4*	61.4	47.1
IDK	9.6	22.1

72-73 Rpt. #: RP153
69-70 Rpt. #: U832

NAEP #: 101142

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	06-15
69-70 Package-Exercise:	07-13

Timing: (in seconds)

RP153	Stimulus:	14
RP153	Response:	21
RP153	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	2.2	-0.2	-3.5	2.1	11.9	-11.3	-18.3	1.6
	1973	-1.0	-2.9	-1.1	5.1	10.1	-9.2	-16.4	2.7

If a sudden change took place on the surface of the Sun, the change could first be observed on Earth after about

○ 1 second.

○ 10 seconds.

○ 30 seconds.

● 8 minutes.

○ 1 hour.

○ I don't know.

AGE 17

RESP	1969	1973
1	8.5	12.7
2	8.7	11.4
3	8.0	7.7
4*	30.9	27.5
5	10.5	9.0
IDK	33.4	31.4

72-73 Rpt. #: RP154
69-70 Rpt. #: U806

NAEP #: 101146

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 02-15
69-70 Package-Exercise: 08-14

Timing: (in seconds)
RP154 Stimulus: 18
RP154 Response: 17
RP154 Grand total: 47

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.1	-2.5	-0.5	2.3	0.9	-0.7	-14.1	1.3
	1973	3.6	0.9	-0.4	-4.6	0.2	-0.2	-13.5	3.7

The particles that make up atoms are usually said to be

○ protons and electrons only.

○ protons and neutrons only.

● protons, neutrons, and electrons.

○ alpha, beta, and gamma rays.

○ alpha particles and beta particles only.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	3.7	4.4
2	5.6	5.4
3*	84.6	84.2
4	1.7	1.2
5	0.4	0.4
IDK	3.7	4.4

72-73 Rpt. #: RP155
69-70 Rpt. #: R337

NAEP #: 101147

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 02-03
69-70 Package-Exercise: 09-02

Timing: (in seconds)
RP155 Stimulus: 9
RP155 Response: 11
RP155 Grand total: 31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.3	-1.0	1.0	-0.9	2.0	-1.8	0.1	-0.0
	1973	0.2	-0.3	0.5	-0.6	1.5	-1.2	1.8	-0.4

Metal cans for holding foodstuffs are chiefly made of

○ copper.

● iron.

○ nickel.

○ tin.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	1.5	1.0
2*	3.0	2.4
3	1.4	1.0
4	93.3	94.5
IDK	0.6	1.0

72-73 Rpt. #: RB156
69-70 Rpt. #: R330

NAEP #: 101148

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	08-19
69-70 Package-Exercise:	09-08

Timing: (in seconds)

RB156	Stimulus:	14
RB156	Response:	21
RB156	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	3.4	-2.8	-2.2	1.4	-6.2	5.6	-0.1	0.6
	1973	13.8	-3.5	0.7	-12.2	-7.0	6.4	0.8	0.9

On the average, in human females, the egg is released how many days after menstruation begins?

○ 2 days
○ 9 days
● 14 days
○ 20 days
○ 24 days

○ I don't know.

	AGE 17	
RESP	1969	1973
1	25.7	19.3
2	10.9	9.8
3*	29.0	27.8
4	4.0	3.8
5	11.2	9.8
IDK	18.5	19.1

72-73 Rpt. #: RP157
69-70 Rpt. #: U823

NAEP #: 101150

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 07-20
69-70 Package-Exercise: 10-06

Timing: (in seconds)
RP157 Stimulus: 12
RP157 Response: 8
RP157 Grand total: 30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	10.8	-1.2	-3.9	-4.3	3.0	-2.7	-18.0	2.5
	1973	6.4	-0.4	-2.5	-4.1	3.6	-3.2	-10.5	2.5

The particles most directly involved in forming chemical bonds are

● electrons.
○ neutrons.
○ photons.
○ positrons.
○ protons.

○ I don't know.

	AGE 17	
RESP	1969	1973
1*	51.7	50.7
2	11.0	14.3
3	1.3	1.2
4	1.1	1.3
5	9.4	13.2
IDK	25.4	17.8

72-73 Rpt. #: RP158
69-70 Rpt. #: U802

NAEP #: 101151

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	09-05
69-70 Package-Exercise:	10-12

Timing: (in seconds)

RP158	Stimulus:	11
RP158	Response:	8
RP158	Grand total:	30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.3	-1.3	2.0	-1.8	0.1	-0.1	-5.4	1.0
	1973	2.4	-1.9	0.6	-1.6	1.4	-1.2	-4.6	1.4

A weather map usually shows all of the following EXCEPT

○ lows.
○ highs.
○ cold fronts.
○ areas where it is raining.
● mileages between major cities.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	0.0	0.1
2	0.1	0.2
3	0.7	0.6
4	2.4	3.1
5*	96.1	95.2
IDK	0.6	0.9

72-73 Rpt. #: RP159
69-70 Rpt. #: U844

NAEP #: 101152

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	02-28
69-70 Package-Exercise:	11-05

Timing: (in seconds)

RP159	Stimulus:	13
RP159	Response:	21
RP159	Grand total:	45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.6	-1.5	-0.4	1.0	2.8	-2.6	-9.2	1.2
	1973	0.1	0.3	-0.6	0.4	2.9	-2.5	-4.4	1.2

About how long does it take for light from the nearest star other than the Sun to reach the Earth?

○ 1 week
○ 1 month
○ 1 year
● 5 years
○ 100 years

○ I don't know.

	AGE 17	
RESP	1969	1973
1	4.9	8.5
2	2.6	3.9
3	8.6	9.4
4*	17.2	10.4
5	22.9	17.1
IDK	43.6	46.9

72-73 Rpt. #: RP160
69-70 Rpt. #: U828

NAEP #: 101153

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: A. Know facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 03-27
69-70 Package-Exercise: 11-07

Timing: (in seconds)
RP160 Stimulus: 12
RP160 Response: 22
RP160 Grand total: 45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	2.8	-3.9	6.3	-8.3	7.0	-6.6	-17.9	3.1
	1973	2.4	-3.7	2.5	-2.9	6.7	-6.8	-21.3	4.3

A refrigerator keeps its contents cool by

○ freshening food.

● transferring heat.

○ destroying energy.

○ keeping ice from melting.

○ producing electric charges.

○ I don't know.

AGE 17

RESP	1969	1973
1	6.2	5.2
2*	44.8	40.9
3	3.9	5.6
4	12.7	11.7
5	14.9	19.0
IDK	17.4	17.2

72-73 Rpt. #:	RU162
69-70 Rpt. #:	U867

NAEP #:	101159

72-73 Obj:	I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective:	A. Know facts and simple concepts.
69-70 Obj:	III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	10-16
69-70 Package-Exercise:	01-07

Timing: (in seconds)

RU162	Stimulus:	27
RU162	Response:	22
RU162	Grand total:	59

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-0.9	-1.2	1.3	0.1	2.9	-3.0	-7.6	1.1
	1973	-0.5	-3.9	1.2	2.4	0.4	-0.4	-5.8	0.4

A scientific model is best described as

○ a small copy of a larger, more complicated piece of equipment.

○ a person who always thinks and acts in a very scientific manner.

○ an assortment of laboratory apparatus designed for a single purpose.

● a scheme that guides one's thinking about something not completely known.

○ the leader of a group of scientists who are all working on the same problem.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	59.8	61.5
2	2.7	1.9
3	11.0	10.0
4*	17.5	18.0
5	3.5	2.0
IDK	5.4	6.3

72-73 Rpt. #: RP163
69-70 Rpt. #: U819

NAEP #: 102023

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: B. Know laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

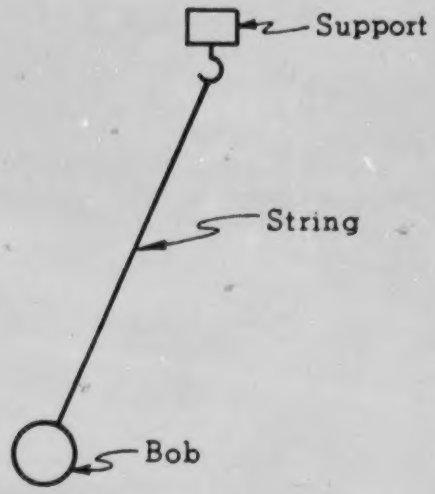
Age:	17
72-73 Package-Exercise:	06-29
69-70 Package-Exercise:	05-01

Timing: (in seconds)

RP163	Stimulus:	21
RP163	Response:	28
RP163	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-0.1	-0.8	0.0	0.6	6.8	-7.2	-17.7	3.1
	1973	-1.1	-2.1	0.5	2.5	5.7	-5.2	-21.6	3.9

The length of time required for a pendulum bob like that shown below to make one complete swing depends primarily upon the



	AGE 17	
RESP	1969	1973
1	10.0	13.4
2	1.5	1.3
3*	61.5	51.1
4	7.1	6.8
5	15.1	18.6
IDK	4.7	8.1

○ mass of the bob.

○ temperature of the air.

● length of the pendulum string.

○ material of which the bob is made.

○ angle through which the bob swings.

○ I don't know.

72-73 Rpt. #: RB164
69-70 Rpt. #: U740

NAEP #: 102030

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: B. Know laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 07-06
69-70 Package-Exercise: 03-01

Timing: (in seconds)
RB164 Stimulus: 11
RB164 Response: 9
RB164 Grand total: 31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	0.4	-4.6	4.8	-2.7	4.0	-3.5	-12.9	2.4
	1972	-7.4	1.4	5.9	-0.1	6.2	-6.1	-14.1	3.2

The density of the human body is most nearly equal to the density of

○ air.
○ cork.
○ hydrogen.
○ iron.
● water.

○ I don't know.

AGE 13

RESP	1969	1972
1	15.3	15.3
2	7.2	8.6
3	14.4	11.8
4	7.2	6.0
5*	37.0	32.9
IDK	18.7	25.3

72-73 Rpt. #: RU165
69-70 Rpt. #: U677

NAEP #: 105009

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: E. Know the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	07-18
69-70 Package-Exercise:	06-07

Timing: (in seconds)

RU165	Stimulus:	12
RU165	Response:	37
RU165	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.8	6.2	-5.6	-1.1	-1.4	1.4	-2.0	-0.2
	1973	0.2	-0.4	-0.9	1.5	-2.2	2.3	1.3	-0.1

How do we get scientific laws?

○ Scientists vote on them.

○ They are made by the police.

○ They are passed by Congress.

● They come from many experiments.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	13.6	13.8
2	15.8	16.6
3	28.8	35.3
4*	33.4	26.0
IDK	7.9	8.2

72-73 Rpt. #: RU166
69-70 Rpt. #: U678

NAEP #: 105010

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: E. Know the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 05-21
69-70 Package-Exercise: 07-15

Timing: (in seconds)

RU166	Stimulus:	8
RU166	Response:	41
RU166	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-2.2	2.4	0.8	-0.9	-3.5	3.8	-2.6	1.2
	1973	-1.6	-1.4	2.4	0.4	-2.3	2.3	-11.5	3.0

What topic do scientists know everything about?

○ Clouds

○ Stars

○ Trees

● No topic

○ I don't know.

AGE 9

RESP	1970	1973
1	12.8	14.1
2	23.2	30.2
3	29.1	24.0
4*	25.9	24.6
IDK	8.8	6.7

72-73 Rpt. #: RU167
69-70 Rpt. #: U772

NAEP #: 105012

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: E. Know the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	07-04
69-70 Package-Exercise:	06-13

Timing: (in seconds)

RU167	Stimulus:	7
RU167	Response:	13
RU167	Grand total:	31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-1.4	-0.3	1.2	0.3	2.2	-1.9	-2.8	0.6
	1972	-0.7	-1.7	0.7	1.6	0.6	-0.6	-3.4	0.9

Most scientists have gone to school for many years.

● I believe this statement.

○ I don't believe this statement.

○ I don't know.

	AGE 13	
RESP	1969	1972
1*	92.0	93.9
2	6.3	4.9
IDK	1.7	1.0

72-73 Rpt. #: RU168
69-70 Rpt. #: U674

NAEP #: 105015

72-73 Obj: I. KNOW THE FUNDAMENTAL ASPECTS OF SCIENCE.
Subobjective: E. Know the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	03-12
69-70 Package-Exercise:	02-07

Timing: (in seconds)

RU168	Stimulus:	10
RU168	Response:	39
RU168	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.0	-4.0	2.4	-2.0	-0.8	0.9	-7.9	2.1
	1973	2.7	-3.0	-0.5	0.6	0.8	-0.9	-14.8	3.3

If you saw many scientists at work, a number of them would be

○ selling soap.

○ cooking meals.

○ painting walls.

● doing experiments.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	0.7	0.7
2	1.5	1.5
3	2.6	2.1
4*	93.8	93.8
IDK	1.3	1.8

72-73 Rpt. #: RP169
69-70 Rpt. #: U614

NAEP #: 201055

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-30
69-70 Package-Exercise:	01-16

Timing: (in seconds)

RP169	Stimulus:	12
RP169	Response:	37
RP169	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	3.6	-0.8	-0.2	-3.0	-0.3	0.3	-16.0	2.9
	1973	3.4	-4.9	0.4	0.7	0.6	-0.6	-10.9	2.7

When it is raining, which of the following must be true?

○ It is spring.
○ The Sun is shining.
○ The wind is blowing.
● There are clouds in the sky.

○ I don't know.

AGE 9

RESP	1970	1973
1	5.9	5.7
2	1.7	2.6
3	9.2	7.6
4*	81.4	81.8
IDK	1.6	2.4

72-73 Rpt. #: RP170
69-70 Rpt. #: U631

NAEP #: 201056

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	02-14
69-70 Package-Exercise:	02-08

Timing: (in seconds)

RP170	Stimulus:	12
RP170	Response:	37
RP170	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	5.2	-6.4	4.2	-6.1	4.5	-5.2	-21.2	5.5
	1973	6.3	-2.9	-3.1	-0.9	6.5	-6.3	-26.1	5.8

Which of the following will speed up the burning of a campfire?

- ● Blow on the fire.
- ○ Cover the fire with sand.
- ○ Sprinkle dirt on the fire.
- ○ Sprinkle water on the fire.

- ○ I don't know.

AGE 9

RESP	1970	1973
1*	67.3	63.3
2	9.6	11.2
3	4.6	7.4
4	15.6	15.6
IDK	2.7	2.4

72-73 Rpt. #: RP171
69-70 Rpt. #: U645

NAEP #: 201061

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-03
69-70 Package-Exercise:	04-03

Timing: (in seconds)

RP171	Stimulus:	7
RP171	Response:	41
RP171	Grand total:	59

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	6.7	-10.7	-4.5	7.0	0.8	-0.9	-12.7	2.3
	1973	2.2	-6.4	0.6	4.1	1.4	-1.4	-13.6	3.2

Which of the following dissolves LEAST in water?

● Glass
○ Salt
○ Soap
○ Sugar

○ I don't know.

AGE 9

RESP	1970	1973
1*	40.2	39.4
2	17.2	21.4
3	21.8	18.3
4	13.1	15.2
IDK	7.5	5.6

72-73 Rpt. #: RP172
69-70 Rpt. #: U612

NAEP #: 201063

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-10
69-70 Package-Exercise:	04-10

Timing: (in seconds)

RP172	Stimulus:	11
RP172	Response:	38
RP172	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	4.0	-5.2	0.3	-0.4	1.0	-1.0	-11.6	2.8
	1973	0.4	-3.6	4.0	-1.7	1.1	-1.1	-12.4	3.0

Which of the following could cause a rainbow?

- ○ Fog and smog
- ○ Rain and snow
- ○ Clouds and ice
- ● Sunshine and rain

- ○ I don't know.

	AGE 9	
RESP	1970	1973
1	2.2	2.9
2	7.5	8.0
3	2.6	2.4
4*	86.6	85.7
IDK	1.0	1.0

72-73 Rpt. #: RP173
69-70 Rpt. #: U654

NAEP #: 201065

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-12
69-70 Package-Exercise: 05-16

Timing: (in seconds)
RP173 Stimulus: 10
RP173 Response: 39
RP173 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.2	-5.0	-0.6	4.1	6.2	-6.0	-10.1	2.0
	1973	1.8	-3.7	-3.3	6.1	2.5	-2.5	-9.8	2.1

Of the following, which is smallest?

- ○ A bit of iron
- ● An atom of iron
- ○ A particle of iron
- ○ A molecule of iron

○ I don't know.

	AGE 9	
RESP	1970	1973
1	23.7	29.8
2*	20.8	17.4
3	15.3	12.7
4	30.2	31.3
IDK	10.0	8.7

72-73 Rpt. #: RB174
69-70 Rpt. #: U625

NAEP #: 201066

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 03-25
69-70 Package-Exercise: 06-10

Timing: (in seconds)
RB174 Stimulus: 11
RB174 Response: 39
RB174 Grand total: 61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	3.1	-4.0	1.7	-1.8	-1.7	1.8	-16.1	3.3
	1973	3.5	-5.4	-0.1	1.6	0.3	-0.3	-10.5	3.3

When an animal breathes faster and its heart beats faster, the animal is most likely

○ cold.

● frightened.

○ resting.

○ sleeping.

○ I don't know.

AGE 9

RESP	1970	1973
1	7.7	8.8
2*	73.3	70.2
3	11.0	13.0
4	4.9	5.9
IDK	2.7	2.0

72-73 Rpt. #: RP175
69-70 Rpt. #: R141

NAEP #: 201067

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	04-05
69-70 Package-Exercise:	07-05

Timing: (in seconds)

RP175	Stimulus:	23
RP175	Response:	27
RP175	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.8	-2.8	0.5	0.1	1.1	-1.2	1.5	0.0
	1973	0.2	-0.4	-0.5	0.9	0.6	-0.6	1.5	-0.8

A pint of water at a temperature of 50° Fahrenheit is mixed with a pint of water at 70° Fahrenheit. The temperature of the water just after mixing will be about

○ 20° F.
○ 50° F.
● 60° F.
○ 70° F.
○ 120° F.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	4.0	4.0
2	2.3	2.5
3*	7.1	6.4
4	4.7	4.4
5	69.3	71.8
IDK	12.3	10.6

72-73 Rpt. #: RP176
69-70 Rpt. #: U650

NAEP #: 201068

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 02-29
69-70 Package-Exercise: 07-10

Timing: (in seconds)
RP176 Stimulus: 8
RP176 Response: 42
RP176 Grand total: 61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	4.2	-6.0	-1.9	3.5	1.1	-1.2	-4.7	0.8
	1973	4.1	-4.7	3.0	-3.4	0.7	-0.7	-9.3	1.8

All of the following can be called matter EXCEPT

○ ice.

● ideas.

○ shoes.

○ water.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	11.7	10.2
2*	36.0	38.9
3	30.7	25.4
4	5.7	7.9
IDK	15.7	16.6

72-73 Rpt. #: RP177
69-70 Rpt. #: U651

NAEP #: 201069

72-73 Obj:	II.	UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective:	A.	Understand and apply facts and simple concepts.
69-70 Obj:	I.	KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	05-31
69-70 Package-Exercise:	08-16

Timing: (in seconds)

RP177	Stimulus:	21
RP177	Response:	29
RP177	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	0.9	-3.3	1.9	-0.2	-0.7	0.7	-14.9	2.4
	1973	-0.8	-3.4	5.2	-1.2	2.4	-2.4	-2.8	0.7

Evaporation takes place in all of the following cases EXCEPT

○ A wet chalkboard dries.
○ Dewdrops disappear from a leaf.
○ Water disappears from a birdbath.
● The outside of a cold glass gets wet.
○ A swimmer sits in the sun after he leaves the water.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	10.5	16.6
2	8.3	8.4
3	12.5	14.2
4*	34.3	24.4
5	20.0	21.7
IDK	14.1	14.6

72-73 Rpt. #: RP178
69-70 Rpt. #: U732

NAEP #: 201070

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	07-10
69-70 Package-Exercise:	06-03

Timing: (in seconds)

RP178	Stimulus:	21
RP178	Response:	14
RP178	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	2.2	-13.2	6.3	1.9	4.6	-4.0	-19.3	3.9
	1972	-2.3	-3.8	4.5	1.0	4.1	-4.0	-22.2	5.0

Which of the following CANNOT be seen directly by the human eye using an ordinary-light microscope or telescope?

○ Moons of Jupiter

● A single atom of carbon

○ The craters on the Moon

○ A one-celled animal from pond water

○ Holes through which gases enter a leaf

○ I don't know.

	AGE 13	
RESP	1969	1972
1	17.1	16.8
2*	49.5	46.6
3	7.0	6.9
4	5.8	6.0
5	10.4	11.8
IDK	8.9	7.6

72-73 Rpt. #: RB179
69-70 Rpt. #: U730

NAEP #: 201071

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 05-25
69-70 Package-Exercise: 06-09

Timing: (in seconds)
RB179 Stimulus: 24
RB179 Response: 10
RB179 Grand total: 45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.8	-8.3	5.2	2.1	1.1	-0.9	-26.0	5.3
	1972	-4.1	-0.8	1.7	2.4	4.4	-4.4	-25.2	5.0

If all green plants died, what would be the most important effect on man?

○ He would have to eat meat only.
● Sooner or later man would die of starvation.
○ Man would get a little sick because he couldn't get vitamins.
○ Man couldn't build houses because there would be no lumber.
○ The land would be bare and not very pretty for man to look at.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	9.7	10.5
2*	50.6	42.5
3	30.5	31.2
4	2.7	4.6
5	4.4	7.6
IDK	2.1	3.2

72-73 Rpt. #: RP180
69-70 Rpt. #: R206

NAEP #: 201072

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-05
69-70 Package-Exercise:	06-11

Timing: (in seconds)

RP180	Stimulus:	20
RP180	Response:	14
RP180	Grand total:	45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	1.9	-9.0	3.7	1.6	3.6	-3.0	-28.4	6.6
	1972	-0.8	-3.8	-1.1	5.4	4.7	-4.7	-29.6	5.5

Fanning can make a campfire burn better because the fanning

○ raises the atmospheric pressure.

○ warms materials to their kindling points.

○ increases the supply of material that can burn.

● increases the supply of oxygen for the burning.

○ provides the energy needed to keep the fire going.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	3.8	3.4
2	2.1	2.4
3	2.4	2.9
4*	78.5	74.5
5	10.4	12.7
IDK	2.7	4.0

72-73 Rpt. #: RP181
69-70 Rpt. #: U746, U830

NAEP #: 201073

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	17
72-73 Package-Exercise:	08-15	02-18
69-70 Package-Exercise:	08-11	10-07

Timing: (in seconds)

		13	17
RP181	Stimulus:	23	22
RP181	Response:	11	13
RP181	Grand total:	45	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.7	-4.0	3.0	0.6	3.2	-3.6	-9.6	1.6
	1972	1.8	2.4	-1.4	-2.7	3.2	-3.2	-13.3	2.6
17	1969	3.5	-7.2	-3.2	5.5	9.4	-8.6	-19.0	3.0
	1973	-2.6	-3.7	3.2	2.5	8.2	-7.1	-12.1	2.8

Suppose that a rubber balloon filled with air does not leak and that it is taken from Earth to the Moon. One can be sure that on the Moon, the balloon will have the same

- ○ size as on Earth.
- ● mass as on Earth.
- ○ weight as on Earth.
- ○ rate of fall as on Earth.
- ○ ability to float as on Earth.

- ○ I don't know.

	AGE 13		AGE 17	
RESP	1969	1972	1969	1973
1	36.0	39.4	34.8	46.8
2*	21.2	21.5	35.6	26.8
3	3.8	4.1	2.2	1.8
4	4.1	2.5	2.0	0.8
5	28.6	25.1	19.2	15.5
IDK	6.4	7.2	6.2	7.4

72-73 Rpt. #: RP182
69-70 Rpt. #: U840

NAEP #: 201075

72-73 Obj:	II.	UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective:	A.	Understand and apply facts and simple concepts.
69-70 Obj:	I.	KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	11-07
69-70 Package-Exercise:	02-08

Timing: (in seconds)

RP182	Stimulus:	21
RP182	Response:	28
RP182	Grand total:	59

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-0.6	6.7	-4.0	1.2	0.9	-0.8	-2.2	0.0
	1973	2.2	-1.6	-2.1	1.6	2.3	-2.4	1.8	0.0

A catalyst in a chemical system may do all of the following EXCEPT

○ speed up the reaction.

○ change the principal product.

○ make a reaction economically important.

○ change the temperature used for the reaction.

● change the amounts of products and reactants present at equilibrium.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	2.9	5.2
2	29.1	23.5
3	10.9	17.6
4	7.2	6.3
5*	21.8	21.2
IDK	28.0	26.1

72-73 Rpt. #: RP183
69-70 Rpt. #: U846

NAEP #: 201078

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 10-14
69-70 Package-Exercise: 08-15

Timing: (in seconds)
RP183 Stimulus: 22
RP183 Response: 12
RP183 Grand total: 45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-0.2	-3.1	-0.5	3.0	4.7	-4.0	-7.6	1.3
	1973	0.9	-0.8	-1.0	0.8	2.5	-2.2	-6.3	1.4

The Earth is classified as a planet for all of the following reasons EXCEPT

○ it revolves around the Sun.
○ its orbit is nearly circular.
● it has a natural satellite, the Moon.
○ it is too cold to give off light of its own.
○ its mass is several times that of the most massive asteroid.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	3.2	3.3
2	11.5	8.5
3*	13.2	12.4
4	29.1	27.3
5	34.8	34.2
IDK	8.1	14.1

72-73 Rpt. #: RP184
69-70 Rpt. #: U813

NAEP #: 201079

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	03-09
69-70 Package-Exercise:	09-01

Timing: (in seconds)

RP184	Stimulus:	15
RP184	Response:	20
RP184	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	1.9	-1.6	0.7	-1.6	4.8	-4.4	-27.0	4.0
	1973	2.6	-2.5	1.1	-2.2	7.0	-7.1	-16.9	3.6

In hot climates, the advantage of buildings with white surfaces is that white surfaces effectively

○ absorb light.
○ diffract light.
● reflect light.
○ refract light.
○ transmit light.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	5.5	6.5
2	12.7	13.3
3*	72.1	67.6
4	5.4	6.9
5	1.3	2.0
IDK	2.7	3.6

72-73 Rpt. #: RB185
69-70 Rpt. #: U812

NAEP #: 201080

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	05-17
69-70 Package-Exercise:	09-13

Timing: (in seconds)

RB185	Stimulus:	15
RB185	Response:	20
RB185	Grand total:	45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-0.2	-7.0	-0.0	4.7	1.1	-1.0	-6.7	1.0
	1973	4.8	-6.4	-1.8	2.4	0.9	-0.8	-7.8	2.1

All of the following have been found in rock. Which one is NOT a fossil?

○ Brachiopod shells

○ Dinosaur footprints

○ Fish bones

● Raindrop imprints

○ Worm trails

○ I don't know.

AGE 17

RESP	1969	1973
1	4.2	4.8
2	2.9	2.6
3	6.5	7.4
4*	71.8	72.0
5	10.2	8.8
IDK	4.4	3.9

72-73 Rpt. #: RP188
69-70 Rpt. #: U673

NAEP #: 201085

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

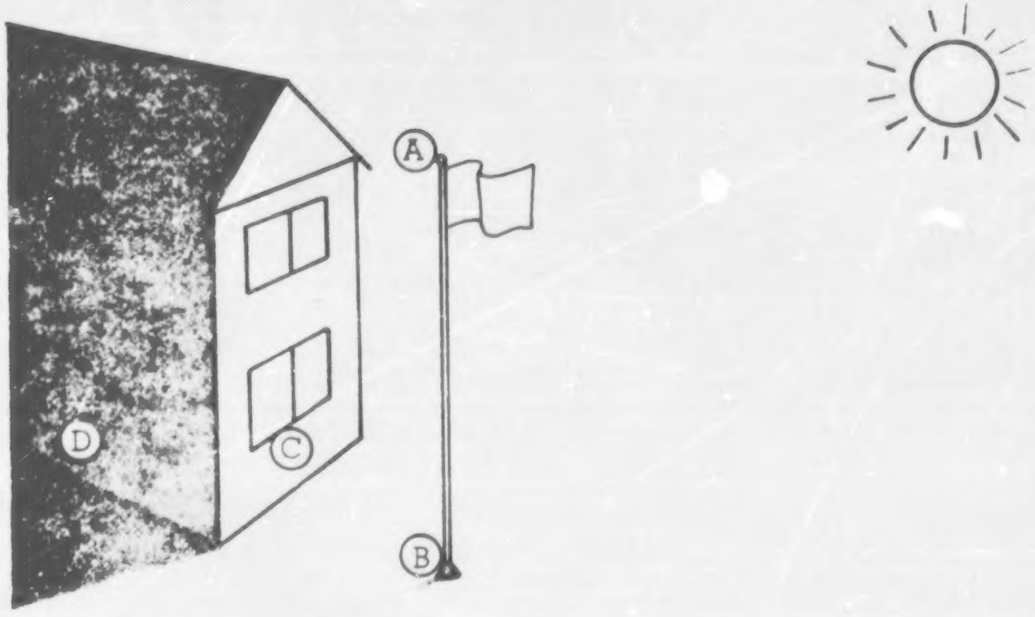
Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	04-32
69-70 Package-Exercise:	06-11

Timing: (in seconds)

RP188	Stimulus:	13
RP188	Response:	36
RP188	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.8	-0.2	-1.2	-1.2	1.3	-1.3	3.3	-0.9
	1973	1.9	1.0	-2.3	-0.1	-0.5	0.5	4.2	-1.2



To find the temperature of the air outdoors, it would be best to put the thermometer at which of the places marked in the picture?

○ A

○ B

○ C

● D

○ I don't know.

	AGE 9	
RESP	1970	1973
1	19.4	35.4
2	2.7	3.1
3	62.8	50.8
4*	11.8	8.2
IDK	2.8	2.4

72-73 Rpt. #: RP189
69-70 Rpt. #: 0726

NAEP #: 201086

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

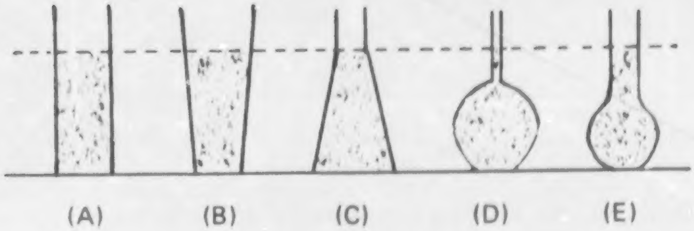
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	08-17
69-70 Package-Exercise:	08-02

Timing: (in seconds)

RP189	Stimulus:	24
RP189	Response:	11
RP189	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	2.1	-10.9	7.0	-1.4	5.1	-5.8	-17.4	3.8
	1972	3.1	-4.0	4.2	-3.4	3.7	-3.7	-18.2	4.4



A quart of water at room temperature (70° Fahrenheit) is poured into each of the five containers as shown above. When the water in all five is heated to 150° Fahrenheit, the water level will be highest in container

○ A.
○ B.
○ C.
● D.
○ E.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	8.5	10.2
2	8.9	9.7
3	9.3	8.2
4*	56.5	52.9
5	6.8	8.0
IDK	9.9	11.0

72-73 Rpt. #: RB190
69-70 Rpt. #: R225

NAEP #: 201104

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: A. Understand and apply facts and simple concepts.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 01-08
69-70 Package-Exercise: 09-06

Timing: (in seconds)
RB190 Stimulus: 17
RB190 Response: 32
RB190 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	3.2	-7.7	-0.5	4.0	2.7	-2.3	-15.4	3.3
	1972	2.0	-5.3	2.8	-1.1	1.3	-1.3	-14.4	3.0

Which of the following should you do when a person faints?

○ Tightly bandage him.
● Lay him down and keep him warm.
○ Hold him up and apply hot packs.
○ Hold him up and apply cold packs.
○ Lay him down and apply cold packs.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	0.2	0.4
2*	31.5	33.7
3	1.0	1.3
4	12.4	13.5
5	47.6	45.1
IDK	7.2	5.8

72-73 Rpt. #: RP191
69-70 Rpt. #: U620

NAEP #: 202078

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-10
69-70 Package-Exercise:	03-19

Timing: (in seconds)

RP191	Stimulus:	11
RP191	Response:	40
RP191	Grand total:	62

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.4	-9.3	1.0	4.5	0.0	-0.0	-22.2	4.6
	1973	1.9	-5.0	3.4	-0.8	-1.2	1.1	-13.0	3.2

It is most likely to snow when the weather is

○ warm and clear.

○ warm and foggy.

○ cold and clear.

○ warm and cloudy.

● cold and cloudy.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	2.3	1.9
2	1.6	1.4
3	15.7	14.8
4	2.5	2.5
5*	76.7	78.8
IDK	1.0	0.5

72-73 Rpt. #: RP192
69-70 Rpt. #: U629

NAEP #: 202080

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

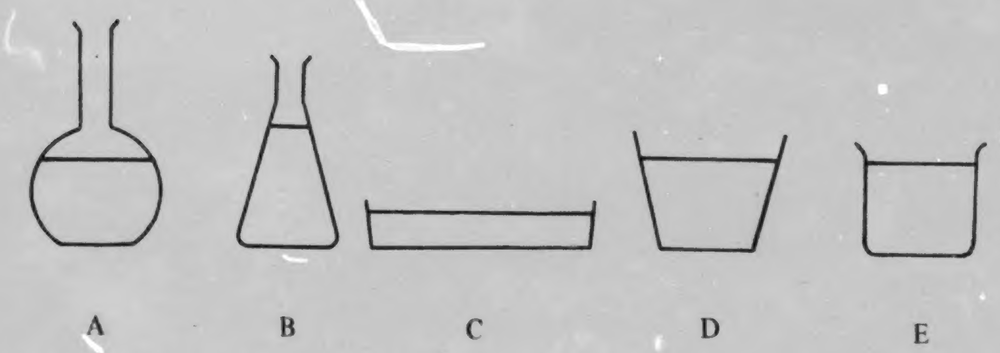
Age:	9
72-73 Package-Exercise:	04-19
69-70 Package-Exercise:	05-10

Timing: (in seconds)

RP192	Stimulus:	20
RP192	Response:	30
RP192	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-0.7	-7.4	3.1	3.5	1.1	-1.1	-23.1	4.4
	1973	-2.0	-5.9	4.8	2.0	0.6	-0.5	-22.0	5.2

A pint of water is poured into each of the containers shown below and they are left uncovered in a warm room.



After a day, which container will have the LEAST amount of water left in it?

○ A

○ B

● C

○ D

○ E

○ I don't know.

	AGE 9	
RESP	1970	1973
1	9.7	13.4
2	8.0	10.5
3*	69.0	61.7
4	5.2	5.7
5	0.0	4.3
IDK	0.0	4.3

72-73 Rpt. #: RP193
69-70 Rpt. #: U626

NAEP #: 202081

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: B. Understand and apply laws (principles).

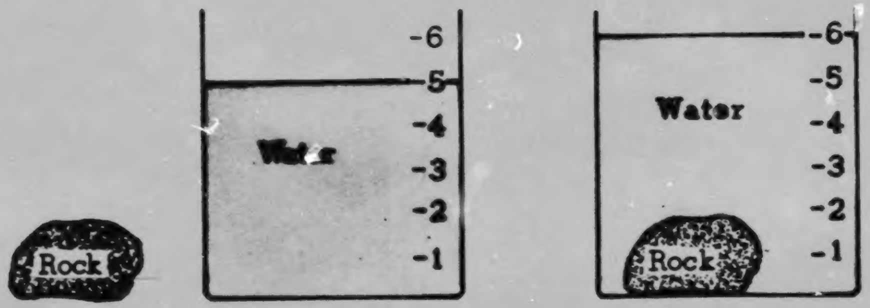
69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-24
69-70 Package-Exercise: 07-11

Timing: (in seconds)
RP193 Stimulus: 22
RP193 Response: 27
RP193 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	9.3	-14.5	4.7	-1.9	0.6	-0.6	-27.3	5.0
	1973	6.1	-9.1	-0.2	3.1	2.6	-2.7	-31.0	7.6


-6
-5
-4
-3
-2
-1
Water
Rock
-6
-5
-4
-3
-2
-1
Water
Rock

A rock is put into a pail that has some water in it. Before the rock is put into the pail, the water is at the 5-pint line. After the rock is added, the water rises to the 6-pint line. The space taken up by the rock is

- ● 1 pint.
- ○ 5 pints.
- ○ 6 pints.
- ○ 11 pints.

- ○ I don't know.

AGE 9

RESP	1970	1973
1*	72.5	64.7
2	4.1	5.7
3	11.4	20.8
4	9.5	5.0
IDK	2.4	3.7

72-73 Rpt. #: RP194
69-70 Rpt. #: U716

NAEP #: 202083

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	03-33
69-70 Package-Exercise:	07-05

Timing: (in seconds)

RP194	Stimulus:	20
RP194	Response:	15
RP194	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	3.3	-0.4	0.5	-4.0	1.0	-0.4	-8.2	2.1
	1972	3.5	0.4	0.7	-4.4	3.2	-3.0	-11.1	2.3

It would take the most work to stop which of the following cars?

○ A light car going 20 miles per hour
○ A light car going 40 miles per hour
○ A heavy car going 10 miles per hour
○ A heavy car going 20 miles per hour
● A heavy car going 40 miles per hour

○ I don't know.

AGE 13

RESP	1969	1972
1	3.6	3.5
2	20.4	20.9
3	4.7	5.2
4	0.5	1.0
5*	68.0	60.9
IDK	2.7	3.6

72-73 Rpt. #: RB195
69-70 Rpt. #: R228

NAEP #: 202084

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-13
69-70 Package-Exercise:	09-07

Timing: (in seconds)

RB195	Stimulus:	27
RB195	Response:	8
RB195	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.2	-6.1	5.4	0.0	3.4	-3.1	-15.0	3.4
	1972	1.8	-5.5	2.0	0.7	4.0	-4.0	-15.5	3.0

A fossil of an ocean fish was found in a rock outcrop on a mountain. This probably means that

○ fish once lived on the mountain.
○ the relative humidity was once very high.
● the mountain was raised up after the fish died.
○ fish used to be amphibians like toads and frogs.
○ the fossil fish was probably carried to the mountain by a great flood.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	2.7	3.4
2	3.1	4.7
3*	25.9	26.1
4	9.4	8.0
5	53.4	51.8
IDK	5.3	6.1

72-73 Rpt. #: RB196
69-70 Rpt. #: U824

NAEP #: 202085

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	09-13
69-70 Package-Exercise:	01-04

Timing: (in seconds)

RB196	Stimulus:	36
RB196	Response:	27
RB196	Grand total:	74

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	4.7	-1.2	-2.8	-0.4	-0.2	0.2	-19.0	2.0
	1973	5.7	-0.9	-4.3	-0.2	-2.0	1.8	-11.4	2.5

In guinea pigs, fur color is dependent on only one pair of genes and black is dominant over white. If no mutations occur, what will happen if a purebred black guinea pig is crossed with a white guinea pig?

○ $\frac{1}{2}$ of the offspring will be black; $\frac{1}{2}$ will be white.

○ $\frac{3}{4}$ of the offspring will be black; $\frac{1}{4}$ will be white.

○ $\frac{9}{16}$ of the offspring will be black; $\frac{7}{16}$ will be white.

● All of the offspring will be black.

○ All of the offspring will be white.

○ I don't know.

AGE 17

RESP	1969	1973
1	8.7	9.9
2	34.3	33.2
3	3.4	2.6
4*	48.0	44.2
5	0.7	0.8
IDK	4.8	9.2

72-73 Rpt. #: RB197
69-70 Rpt. #: U845

NAEP #: 202087

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 10-09
69-70 Package-Exercise: 02-02

Timing: (in seconds)
RB197 Stimulus: 29
RB197 Response: 20
RB197 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	1.4	1.0	0.2	-2.2	5.9	-5.2	-4.6	0.4
	1973	-0.8	0.6	1.0	-0.9	1.4	-1.3	-0.7	-0.1

If a large amount of mineral fertilizer is placed around a house plant, the plant is likely to wilt and die. The best explanation for this is that

- ○ the plant ages more rapidly.
- ○ the plant weakens and dies of disease.
- ● the amount of water in the roots has been decreased.
- ○ the plant cannot produce food because its chlorophyll has been destroyed.
- ○ the fertilizer uses up the carbon dioxide needed by the plant to make its own food.

- ○ I don't know.

	AGE 17	
RESP	1969	1973
1	1.9	2.8
2	1.6	2.2
3*	16.4	15.4
4	13.6	11.2
5	52.2	55.1
IDK	14.0	13.2

72-73 Rpt. #: RP198
69-70 Rpt. #: U811

NAEP #: 202088

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

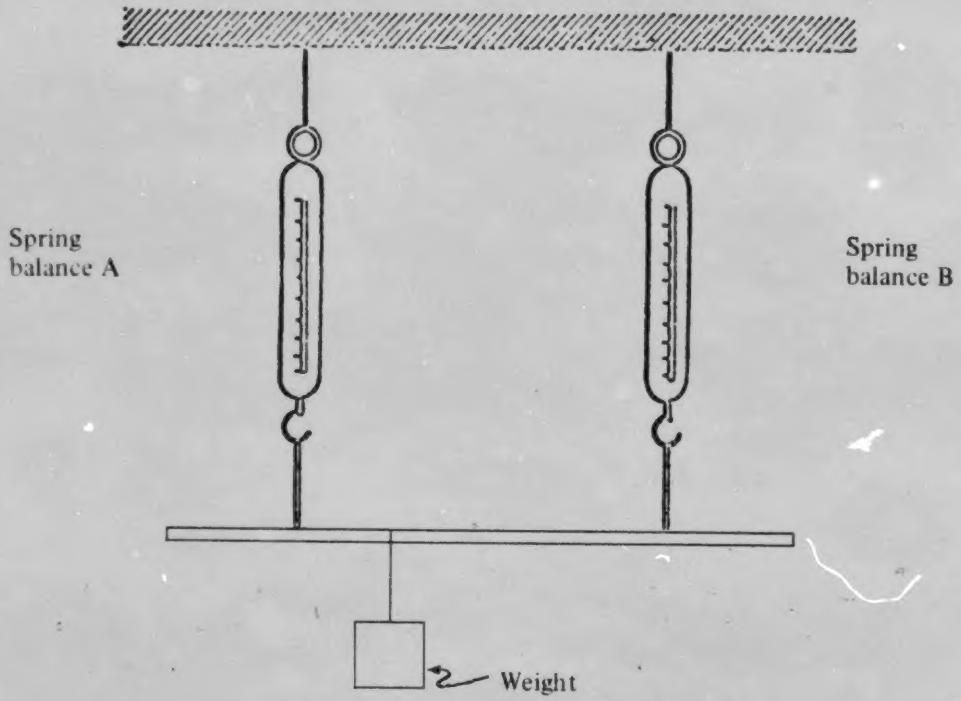
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 09-19
69-70 Package-Exercise: 05-02

Timing: (in seconds)
RP198 Stimulus: 17
RP198 Response: 33
RP198 Grand total: 61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-0.6	-4.7	0.7	3.1	8.6	-9.0	-15.7	2.2
	1973	2.9	-3.0	-0.7	0.4	8.0	-7.3	-21.1	4.0

Two identical spring balances are arranged as shown. Which spring balance will show the higher reading?


Spring balance A
Spring balance B
Weight

● A.

○ B.

○ Both spring balances will show the same reading.

○ One cannot predict which spring balance will show the higher reading.

○ I don't know.

	AGE 17	
RESP	1969	1973
1*	74.8	74.7
2	8.2	9.2
3	8.6	6.8
4	4.9	6.0
IDK	3.6	3.1

72-73 Rpt. #: RP199
69-70 Rpt. #: U849

NAEP #: 202089

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

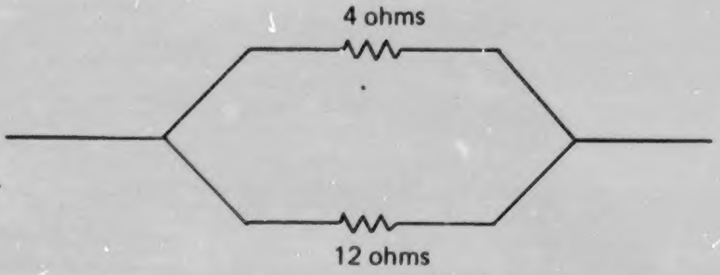
Age:	17
72-73 Package-Exercise:	07-26
69-70 Package-Exercise:	05-04

Timing: (in seconds)

RP199	Stimulus:	14
RP199	Response:	36
RP199	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	3.7	0.7	-1.8	-1.8	3.2	-3.4	-1.6	-2.9
	1973	1.8	0.3	-1.0	-1.2	1.6	-1.4	-2.6	0.5

The resistance of the parallel connection of the two resistors shown below will be most nearly



● 3 ohms.

○ 8 ohms.

○ 12 ohms.

○ 16 ohms.

○ 48 ohms.

○ I don't know.

	AGE 17	
RESP	1969	1973
1*	8.7	8.8
2	17.7	23.3
3	1.6	2.0
4	23.9	26.5
5	6.9	10.2
IDK	40.2	28.2

72-73 Rpt. #: RP200
69-70 Rpt. #: U851

NAEP #: 202090

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 08-07
69-70 Package-Exercise: 05-09

Timing: (in seconds)
RP200 Stimulus: 44
RP200 Response: 35
RP200 Grand total: 89

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	2.9	-0.5	-2.1	0.2	1.6	-1.6	0.3	0.1
	1973	1.2	0.2	-0.6	-0.8	-0.0	0.0	0.8	-0.0

During an electrolysis, 1.0 faraday of electrons (1 mole of electrons) can produce which of the following?

○ 1.0 mole of H_2 from H_2SO_4 solution
○ 1.0 mole of O_2 from H_2SO_4 solution
○ 1.0 mole of Cl_2 from NaCl solution
○ 1.0 gram-atom (1 mole of atoms) of Cu from $CuSO_4$ solution
● 1.0 gram-atom (1 mole of atoms) of Ag from $AgNO_3$ solution

○ I don't know.

	AGE 17	
RESP	1969	1973
1	12.2	9.7
2	4.5	3.9
3	6.3	5.1
4	4.7	3.5
5*	4.1	2.2
IDK	68.1	75.3

72-73 Rpt. #: RP201
69-70 Rpt. #: U836

NAEP #: 202091

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 10-21
69-70 Package-Exercise: 08-02

Timing: (in seconds)
RP201 Stimulus: 25
RP201 Response: 25
RP201 Grand total: 61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	2.9	-3.9	-1.0	1.0	1.5	-1.3	-15.4	1.8
	1973	-0.8	-1.2	1.5	0.1	5.5	-5.0	-12.8	2.6

An object starts from rest and moves with constant acceleration. If the object has a speed of 10 meters per second after 5 seconds, the acceleration of the object is

○ 1m/sec^2.
● 2m/sec^2.
○ 5m/sec^2.
○ 10m/sec^2.
○ 50m/sec^2.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	2.0	2.5
2*	26.2	22.7
3	10.1	10.0
4	11.1	11.5
5	32.8	23.8
IDK	17.7	28.9

72-73 Rpt. #: RB202
69-70 Rpt. #: U801

NAEP #: 202092

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 06-05
69-70 Package-Exercise: 08-03

Timing: (in seconds)
RB202 Stimulus: 18
RB202 Response: 16
RB202 Grand total: 44

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.1	-0.6	0.7	-0.6	-1.2	1.0	-3.6	0.7
	1973	0.8	-0.5	-0.0	-0.5	-0.9	0.8	-6.0	1.4

A meal consists of milk, bread and butter, meat, and cake. To satisfy the rules of good nutrition, what should be added to this meal?

- ● A green or yellow vegetable
- ○ Baked beans
- ○ Cheese
- ○ Coffee or tea
- ○ Pickles and olives

- ○ I don't know.

	AGE 17	
RESP	1969	1973
1*	98.2	97.2
2	0.2	0.3
3	0.3	0.6
4	0.5	0.7
5	0.1	0.6
IDK	0.6	0.5

72-73 Rpt. #: RP203
69-70 Rpt. #: U838

NAEP #: 202093

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 04-17
69-70 Package-Exercise: 10-08

Timing: (in seconds)
RP203 Stimulus: 26
RP203 Response: 22
RP203 Grand total: 59

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	0.2	-0.5	-1.5	2.0	6.6	-6.1	-4.1	0.7
	1973	-0.3	-0.5	0.2	0.4	8.8	-9.0	2.9	0.0

A copper wire carrying an alternating current is placed near the north pole of a magnet, and the wire vibrates. The wire would NOT vibrate

- ○ if the wire were made of iron.
- ● if the wire were connected to a direct-current source.
- ○ if the temperature of the wire were raised.
- ○ if the magnet were moved closer to the wire.
- ○ if the magnet were reversed so that the south pole would be close to the wire.

- ○ I don't know.

AGE 17

RESP	1969	1973
1	7.2	7.6
2*	23.0	23.7
3	1.6	1.5
4	7.3	7.1
5	30.6	34.6
IDK	30.1	24.9

72-73 Rpt. #: RP205
69-70 Rpt. #: R232

NAEP #: 202102

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: B. Understand and apply laws (principles).

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

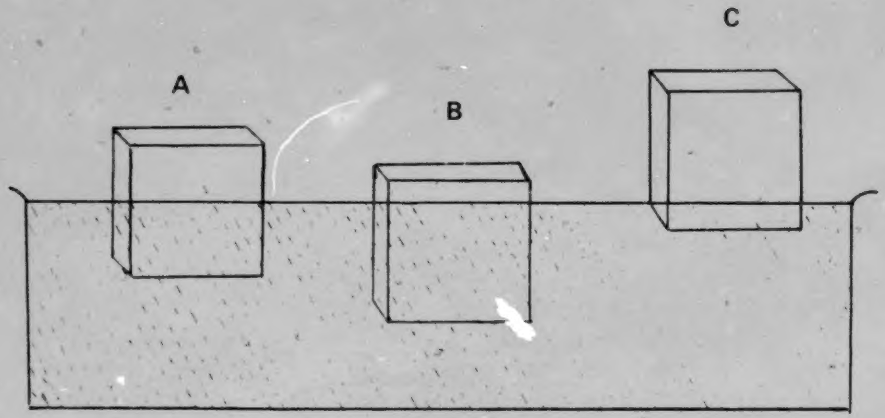
Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	13
72-73 Package-Exercise:	01-05
69-70 Package-Exercise:	05-13

Timing: (in seconds)

RP205	Stimulus:	20
RP205	Response:	30
RP205	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	2.2	-2.6	0.8	-1.2	2.2	-1.5	-10.9	2.2
	1972	0.1	-2.1	4.3	-3.9	2.0	-2.1	-9.0	2.5



The three solid objects shown above have the same volume. If they float as shown in the diagram, which one weighs the most?

○ Object A

● Object B

○ Object C

○ They all weigh the same.

○ It is impossible to tell without additional information.

○ I don't know.

AGE 13

RESP	1969	1972
1	0.4	0.3
2*	75.1	82.9
3	3.9	3.3
4	6.4	4.3
5	13.4	8.2
IDK	0.8	1.0

72-73 Rpt. #: RP206
69-70 Rpt. #: R135

NAEP #: 202106

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: B. Understand and apply laws (principles).

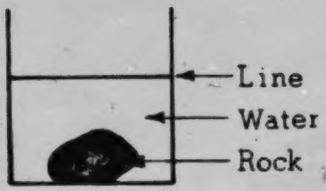
69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

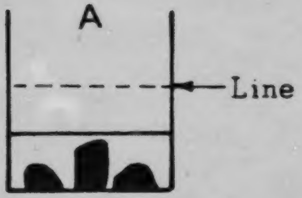
Age: 9
72-73 Package-Exercise: 01-21
69-70 Package-Exercise: 02-09

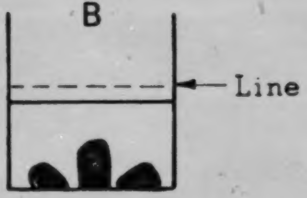
Timing: (in seconds)
RP206 Stimulus: 21
RP206 Response: 28
RP206 Grand total: 60

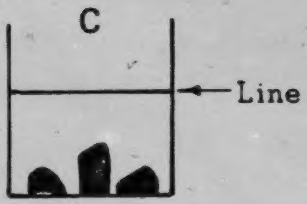
		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-4.2	-5.1	5.4	2.1	2.5	-2.9	-8.3	2.0
	1973	0.2	-2.4	-1.7	3.6	2.6	-2.6	-10.9	2.3

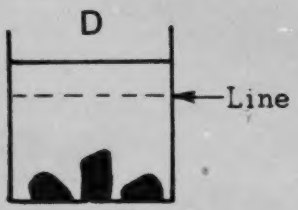

Line
Water
Rock

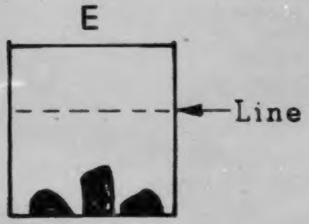
When a rock is put into a pail of water, the water comes up to the line as the picture above shows. If the rock is broken into three pieces, which of the following pictures shows how high the water is?











○ A

○ B

● C

○ D

○ E

○ I don't know.

	AGE 9	
RESP	1970	1973
1	11.6	10.3
2	10.2	9.3
3*	38.2	33.7
4	16.2	20.6
5	13.8	15.9
IDK	9.6	8.5

72-73 Rpt. #: RB207
69-70 Rpt. #: R222, R314

NAEP #: 203022

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: C. Understand and apply conceptual schemes.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13	17
72-73 Package-Exercise:	07-14	07-24
69-70 Package-Exercise:	08-08	06-04

Timing: (in seconds)

RB207	Stimulus:	41	39
RB207	Response:	23	25
RB207	Grand total:	75	75

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-7.9	0.6	7.0	0.1	-1.2	1.3	0.3	-0.3
	1972	-2.8	-2.9	0.3	5.4	-0.0	0.0	-4.7	1.3
17	1969	3.5	-7.6	0.7	0.5	2.5	-2.5	-11.2	1.2
	1973	1.9	-4.8	-2.6	4.7	2.1	-1.9	-13.0	2.7

In terms of the theory of natural selection, what is the explanation of why giraffes have come to have such long necks?

- ○ Stretching to get food in high trees has made their necks longer.
- ○ There is something inside of giraffes which keeps making longer necks.
- ○ Giraffe food contained vitamins which caused the vertebrae to lengthen.
- ○ Giraffe necks have gotten longer and longer as time has gone on, but nobody has any idea why this is.
- ● Giraffes born with the longest necks have been able to stay alive when food was scarce and have passed this trait on to their offspring.

- ○ I don't know.

	AGE 13		AGE 17	
RESP	1969	1972	1969	1973
1	8.0	7.3	11.7	11.7
2	2.4	2.8	1.2	1.7
3	11.5	7.6	5.6	5.6
4	27.6	22.9	10.9	14.7
5*	38.4	44.2	60.2	55.1
IDK	12.0	15.0	10.2	10.3

72-73 Rpt. #: RP208
69-70 Rpt. #: U734

NAEP #: 203023

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: C. Understand and apply conceptual schemes.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

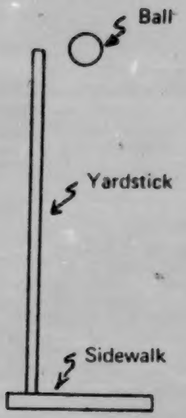
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	02-16
69-70 Package-Exercise:	08-13

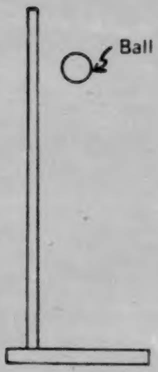
Timing: (in seconds)

RP208	Stimulus:	19
RP208	Response:	17
RP208	Grand total:	47

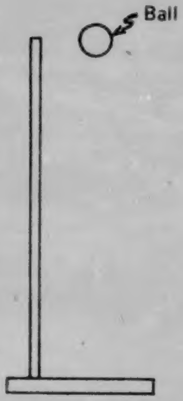
		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	1.3	-6.1	1.4	1.8	11.6	-13.2	-23.1	4.2
	1972	-4.4	-0.1	3.5	0.5	10.4	-10.2	-16.6	3.7


Ball
Yardstick
Sidewalk

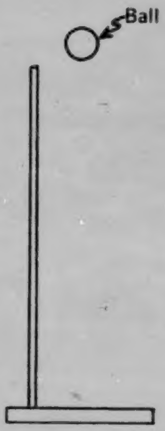
A ball is dropped on the sidewalk from a height of one yard as the picture above shows. Which of the following pictures shows how high the ball could bounce?



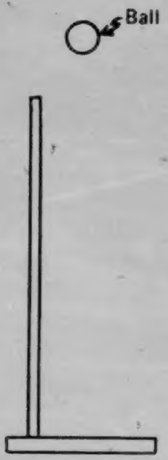
A



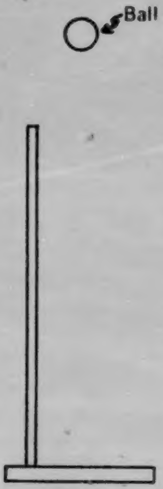
B



C



D



E

● A

○ B

○ C

○ D

○ E

○ I don't know.

	AGE 13	
RESP	1969	1972
1*	47.5	40.5
2	18.8	19.2
3	5.4	5.3
4	3.6	2.6
5	18.7	24.6
IDK	6.0	7.8

72-73 Rpt. #: RP209
69-70 Rpt. #: U712

NAEP #: 204073

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	13
72-73 Package-Exercise:	05-03
69-70 Package-Exercise:	04-12

Timing: (in seconds)

RP209	Stimulus:	13
RP209	Response:	21
RP209	Grand total:	45

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.4	-6.9	5.4	1.0	5.2	-4.7	-22.9	4.2
	1972	-1.6	-4.7	3.4	1.5	6.1	-6.1	-22.5	4.4

To get the salt out of saltwater, one could

○ cool the water.
○ add more water.
● boil away the water.
○ dissolve air in the water.
○ remove all of the air from the water.

○ I don't know.

AGE 13

RESP	1969	1972
1	2.1	1.8
2	5.2	6.5
3*	76.0	72.6
4	3.7	5.0
5	6.2	4.1
IDK	6.7	10.0

72-73 Rpt. #: RP210
69-70 Rpt. #: U841

NAEP #: 204075

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: I. KNOW FUNDAMENTAL FACTS AND PRINCIPLES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	05-03
69-70 Package-Exercise:	08-09

Timing: (in seconds)

RP210	Stimulus:	18
RP210	Response:	31
RP210	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	4.5	5.7	-4.0	-3.6	0.8	-0.7	19.8	-2.2
	1973	-1.6	2.6	1.5	-2.3	-0.7	0.6	6.9	-1.7

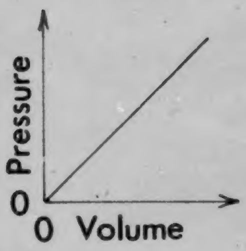
Assume that temperature does not change. Which one of the graphs below best shows how the pressure of a sample of gas changes as its volume changes?

○ A
○ B
○ C
○ D
● E

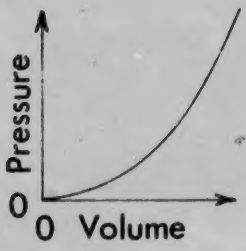
○ I don't know.

	AGE 17	
RESP	1969	1973
1	16.0	20.4
2	19.4	27.2
3	11.0	9.6
4	9.6	13.1
5*	18.6	15.2
IDK	25.2	14.2

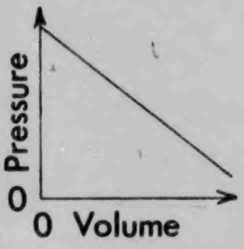
A



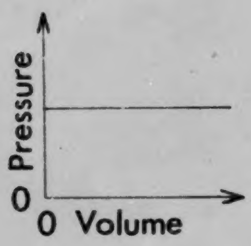
B



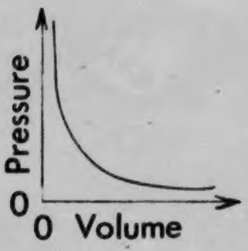
C



D



E



72-73 Rpt. #: RB211
69-70 Rpt. #: U660

NAEP #: 204076

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

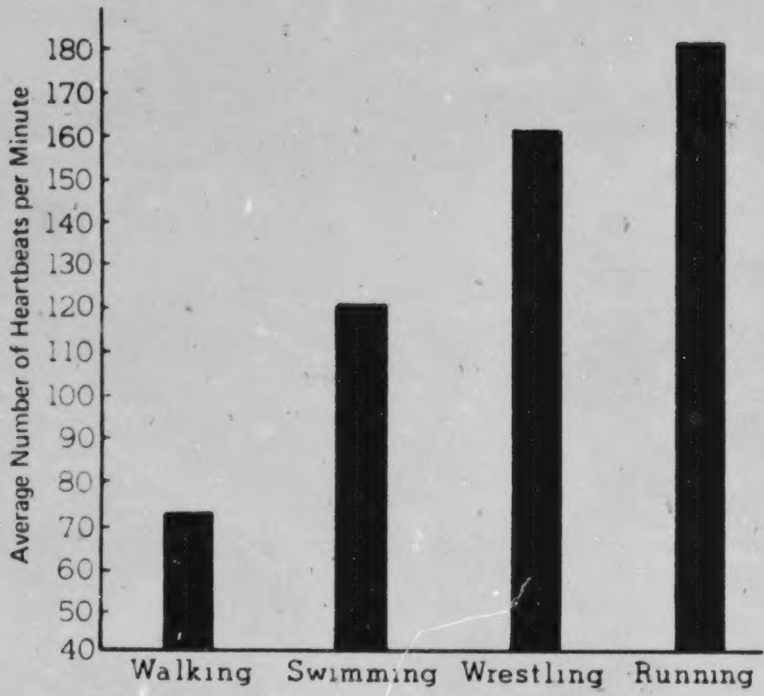
69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 07-21
69-70 Package-Exercise: 01-05

Timing: (in seconds)
RB211 Stimulus: 10
RB211 Response: 39
RB211 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.2	-3.0	2.5	-1.7	0.6	-0.7	-8.0	2.6
	1973	1.2	-5.1	2.7	0.7	0.5	-0.5	-4.7	1.1



According to the graph above, your heart probably beats fastest when you are

○ walking.

○ swimming.

○ wrestling.

● running.

○ I don't know.

AGE 9

RESP	1970	1973
1	1.3	1.4
2	1.5	2.0
3	4.6	4.3
4*	91.1	91.4
IDK	1.4	0.7

72-73 Rpt. #: RP212
69-70 Rpt. #: U664

NAEP #: 204077

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 05-24
69-70 Package-Exercise: 01-07

Timing: (in seconds)
RP212 Stimulus: 17
RP212 Response: 32
RP212 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	4.1	-11.3	2.9	1.0	0.3	-0.4	-25.5	4.9
	1973	-1.6	-5.8	4.2	3.0	1.6	-1.6	-26.1	7.0

Which of the following would be easiest to measure with a ruler that is 12 inches long?

● The length of a pencil
○ The thickness of a sheet of paper
○ The distance from your home to the school
○ The distance from your home to the nearest grocery store

○ I don't know.

	AGE 9	
RESP	1970	1973
1*	74.3	70.2
2	16.5	17.2
3	2.0	3.8
4	2.8	4.1
IDK	4.2	4.2

72-73 Rpt. #: RP213
69-70 Rpt. #: U672

NAEP #: 204078

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-09
69-70 Package-Exercise:	01-14

Timing: (in seconds)

RP213	Stimulus:	41
RP213	Response:	33
RP213	Grand total:	85

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	0.9	-3.0	3.7	-2.7	0.8	-0.9	-3.4	1.0
	1973	3.6	-3.2	-0.3	-0.5	1.4	-1.4	-8.4	2.1

A class decided to show the temperature on each of 3 days. They used the following symbols:

○ for over 80° F

□ for 60° - 80° F

△ for 40° - 60° F

The temperatures on each of three days were:

	Monday	Tuesday	Wednesday
Temperature	85°	84°	55°

Which of the following shows the temperatures?

	Mon.	Tues.	Wed.
○	○	□	△
●	○	○	△
○	○	○	□
○	□	□	△

○ I don't know.

	AGE 9	
RESP	1970	1973
1	30.2	29.0
2*	19.3	19.1
3	7.2	6.0
4	6.3	5.8
IDK	34.7	34.8

72-73 Rpt. #: RP214
69-70 Rpt. #: U671

NAEP #: 204081

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	05-12
69-70 Package-Exercise:	03-18

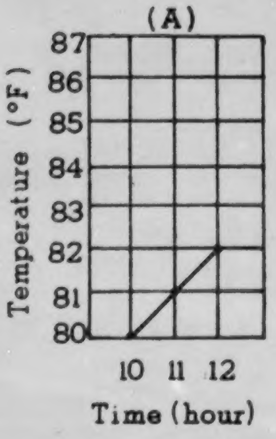
Timing: (in seconds)

RP214	Stimulus:	23
RP214	Response:	25
RP214	Grand total:	59

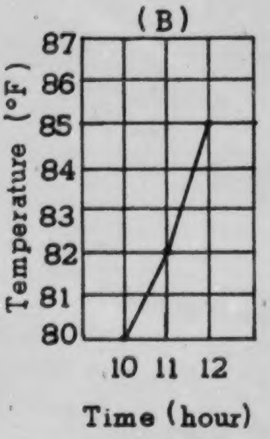
		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.8	-10.3	6.0	-2.3	3.7	-3.8	-8.5	2.2
	1973	-1.5	-3.4	6.8	-2.2	1.3	-1.3	-9.2	2.3

Some children found that the temperature was 80° F at 10 o'clock, 82° F at 11 o'clock, and 85° F at 12 o'clock. Which of the following is the best record of their findings?

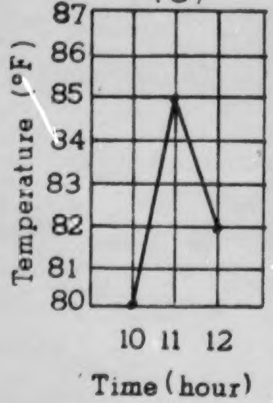
(A)



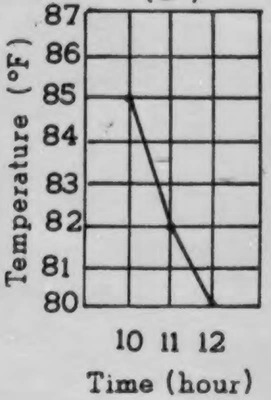
(B)



(C)



(D)



○ A

● B

○ C

○ D

○ I don't know.

	AGE 9	
RESP	1970	1973
1	11.4	12.1
2*	31.3	26.2
3	20.1	21.4
4	19.6	23.4
IDK	17.2	16.2

72-73 Rpt. #: RP215
69-70 Rpt. #: U663

NAEP #: 204083

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

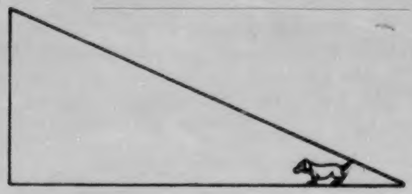
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	04-16
69-70 Package-Exercise:	04-05

Timing: (in seconds)

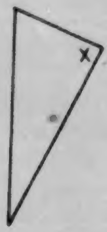
RP215	Stimulus:	17
RP215	Response:	32
RP215	Grand total:	59

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.6	-5.9	2.2	-0.8	1.7	-1.7	-18.6	4.7
	1973	2.4	-5.1	3.1	-1.1	-1.6	1.5	-19.4	4.7

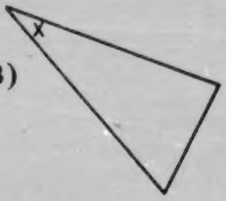


Above is a picture John drew of a dog in a yard. Which of the following pictures shows an x in the same place in the yard as the dog in John's picture?

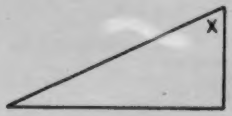
(A)



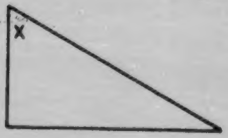
(B)



(C)



(D)



○ A

● B

○ C

○ D

○ I don't know.

	AGE 9	
RESP	1970	1973
1	5.3	3.9
2*	76.2	82.7
3	2.9	1.9
4	13.2	10.0
IDK	2.0	1.0

72-73 Rpt. #: RP216
69-70 Rpt. #: U668

NAEP #: 204084

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	02-34
69-70 Package-Exercise:	05-07

Timing: (in seconds)

RP216	Stimulus:	24
RP216	Response:	25
RP216	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	4.6	-12.0	5.0	-0.3	-0.8	0.8	-27.8	6.0
	1973	6.7	-7.2	-1.0	0.8	0.4	-0.4	-25.3	5.2

Clouds may be high, middle, or low.

High clouds are above 20,000 feet.

Middle clouds are between 6,000 and 20,000 feet.

Low clouds are between the ground and 6,000 feet.

A cloud at 10,000 feet is a

○ low cloud.
● middle cloud.
○ high cloud.

○ I don't know.

AGE 9

RESP	1970	1973
1	12.1	10.9
2*	63.7	58.6
3	21.2	24.6
IDK	2.8	5.0

72-73 Rpt. #: RU217
69-70 Rpt. #: U661

NAEP #: 204086

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

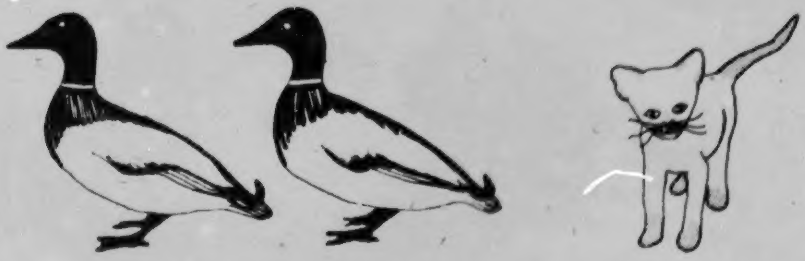
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	04-26
69-70 Package-Exercise:	05-15

Timing: (in seconds)

RU217	Stimulus:	16
RU217	Response:	33
RU217	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.7	-8.2	2.7	1.1	-0.4	0.4	-22.9	4.3
	1973	1.5	-3.2	1.4	-0.0	-1.4	1.3	-15.1	3.8



If D stands for duck and C stands for cat, which of the following best represents the picture?

○ D, C, C

○ D, C, D

● D, D, C

○ D, D, D

○ I don't know.

	AGE	9
RESP	1970	1973
1	2.6	1.5
2	2.6	2.4
3*	87.1	89.9
4	5.4	4.6
IDK	2.1	1.5

72-73 Rpt. #: RB218
69-70 Rpt. #: U658

NAEP #: 204087

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	06-35
69-70 Package-Exercise:	07-07

Timing: (in seconds)

RB218	Stimulus:	13
RB218	Response:	36
RB218	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.1	-3.7	1.0	0.1	-1.1	1.1	-11.5	1.8
	1973	-2.3	-1.8	2.4	1.9	-0.8	0.8	-8.1	2.7

Which of the following is the surest sign that a dog is sick?

- ○ Its fur is clean.
- ○ It sleeps at night.
- ○ It is very playful.
- ● It has not eaten its food for two days.

- ○ I don't know.

	AGE 9	
RESP	1970	1973
1	0.8	1.1
2	1.2	1.8
3	1.3	3.2
4*	95.6	90.3
IDK	0.9	3.4

72-73 Rpt. #: RB219
69-70 Rpt. #: R151

NAEP #: 204088

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

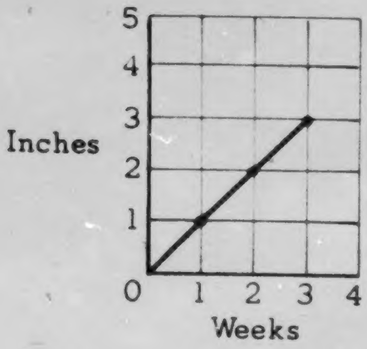
Age: 9
72-73 Package-Exercise: 06-11
69-70 Package-Exercise: 08-04

Timing: (in seconds)
RB219 Stimulus: 20
RB219 Response: 28
RB219 Grand total: 60

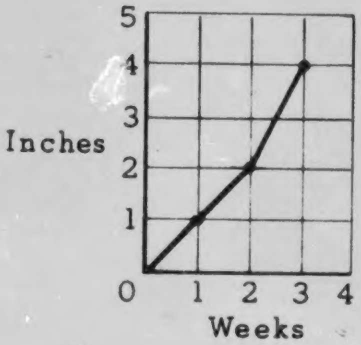
		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	3.5	-5.1	-0.7	1.8	3.2	-3.2	-20.5	3.3
	1973	2.4	-6.0	2.4	0.8	1.1	-1.2	-12.4	2.5

A plant grows this way: The first week it is 1 inch high. The second week it is 2 inches high. The third week it is 4 inches high. Which of the following graphs shows this growth?

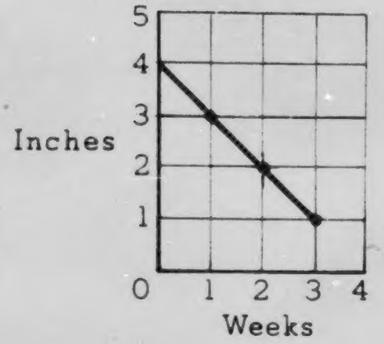
A



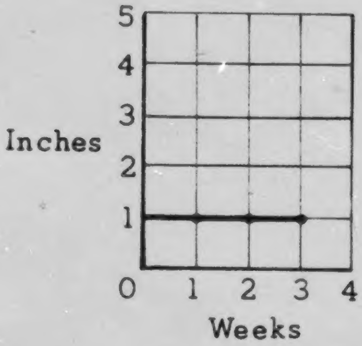
B



C



D



○ A

● B

○ C

○ D

○ I don't know.

AGE 9

RESP	1970	1973
1	10.9	9.9
2*	54.4	55.5
3	12.7	14.4
4	8.0	10.3
IDK	13.6	9.2

72-73 Rpt. #: RP220
69-70 Rpt. #: U669

NAEP #: 204089

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	07-16
69-70 Package-Exercise:	08-07

Timing: (in seconds)

RP220	Stimulus:	12
RP220	Response:	36
RP220	Grand total:	59

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	8.5	1.3	-0.5	-9.7	-1.5	1.5	-8.8	2.3
	1973	6.6	-4.2	0.6	-4.0	-2.0	2.0	-14.3	3.2

In most of the United States, a noon temperature of 30° F is most likely in

● January.

○ May.

○ June.

○ July.

○ I don't know.

AGE 9

RESP	1970	1973
1*	52.7	62.8
2	13.3	13.7
3	11.2	8.2
4	12.8	10.6
IDK	10.0	4.5

72-73 Rpt. #: RU221
69-70 Rpt. #: R147

NAEP #: 204090

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	05-07
69-70 Package-Exercise:	08-09

Timing: (in seconds)

RU221	Stimulus:	37
RU221	Response:	37
RU221	Grand total:	85

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	0.4	-8.2	7.5	-1.6	-0.4	0.4	-26.1	4.5
	1973	0.0	-8.2	4.6	3.4	-0.7	0.7	-10.9	2.0

Someone said that if you mix salt and sugar with water and let the mixture stand you get saltwater taffy--a kind of candy. Which of the following would be the best way for you to test this idea?

○ Take a vote among your friends.
○ Buy some saltwater taffy and see if it has salt in it.
○ Find out if salt and sugar have the same chemicals in them.
○ Grind up some saltwater taffy to see if you get salt, sugar, and water.
● Try to mix salt, sugar, and water, let them stand, and see what happens.

○ I don't know.

	AGE 9	
RESP	1970	1973
1	2.7	3.1
2	11.1	8.8
3	6.0	8.3
4	6.3	7.1
5*	68.9	68.7
IDK	4.7	3.5

72-73 Rpt. #:	RB222
69-70 Rpt. #:	U665
NAEP #:	204091

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	06-22
69-70 Package-Exercise:	08-12

Timing: (in seconds)

RB222	Stimulus:	17
RB222	Response:	32
RB222	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	3.1	-7.5	5.4	-2.7	-1.3	1.3	-27.3	5.4
	1973	6.2	-9.9	5.9	-4.3	-0.5	0.5	-24.4	6.1

If you want to find out how much a person grew in 1 year, which of the following must you know about the person?

○ His age

○ The type of food he eats

● His height at the start of the year

○ The height of his mother and father

○ I don't know.

	AGE 9	
RESP	1970	1973
1	12.5	12.9
2	9.8	11.6
3*	70.3	66.4
4	3.8	5.5
IDK	3.5	3.5

72-73 Rpt. #: RP223
69-70 Rpt. #: U757

NAEP #: 204092

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

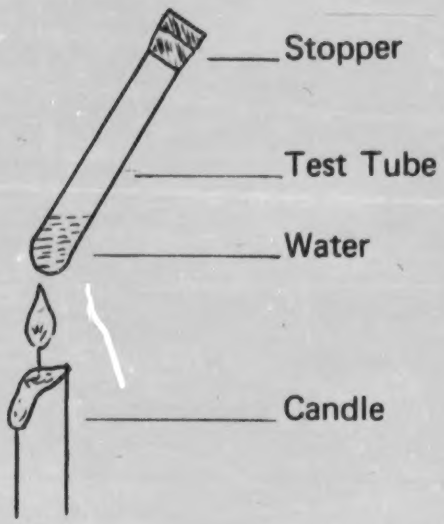
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	06-02
69-70 Package-Exercise:	01-06

Timing: (in seconds)

RP223	Stimulus:	27
RP223	Response:	38
RP223	Grand total:	76

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.4	-3.9	2.0	1.2	7.5	-7.7	-10.0	2.4
	1972	0.7	-0.1	-1.9	1.6	7.3	-6.8	-16.4	2.3



Water is heated as shown in the diagram above. If the stopper pops out, which of the following is most important in accounting for this?

○ The stopper gets hot and expands.
● Some of the water is changed to steam.
○ The air in the test tube absorbs heat.
○ The glass test tube gets very hot and starts to melt.
○ The glass test tube expands more than the stopper.

○ I don't know.

AGE 13

RESP	1969	1972
1	19.2	22.3
2*	52.2	51.2
3	10.1	8.5
4	1.6	3.2
5	12.2	10.3
IDK	4.4	4.3

72-73 Rpt. #: RB224
69-70 Rpt. #: U750

NAEP #: 204095

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	04-01
69-70 Package-Exercise:	03-03

Timing: (in seconds)

RB224	Stimulus:	18
RB224	Response:	17
RB224	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	5.5	-9.5	-0.1	2.6	-3.5	3.0	-25.9	5.1
	1972	9.2	-7.7	3.2	-6.3	-2.6	2.8	-31.0	7.8

Which of the following statements is an opinion rather than a fact about cats?

○ Cats eat mice.

○ Cats have fur.

○ Cats have tails.

○ Cats are related to tigers.

● Siamese cats are prettier than other cats.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	4.2	6.8
2	2.2	3.5
3	1.2	2.6
4	11.4	13.2
5*	79.3	70.8
IDK	1.3	1.8

72-73 Rpt. #: RP225
69-70 Rpt. #: U751

NAEP #: 204096

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	08-13
69-70 Package-Exercise:	04-08

Timing: (in seconds)

RP225	Stimulus:	33
RP225	Response:	32
RP225	Grand total:	76

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	3.9	-2.8	-3.2	1.8	4.2	-4.0	-8.3	2.5
	1972	-1.1	0.5	0.5	0.0	1.9	-2.0	-12.6	3.4

A boy notices that water puddles of the same size last longer in winter than in summer. Which of the following is the best explanation?

● Water evaporates faster on hot days.
○ Cold water is thick and doesn't run very quickly.
○ Water can sink into the ground only in the winter.
○ There are fewer winds in summer to interfere with drying up puddles.
○ The heat of the summer sun changes water to hydrogen and oxygen gases.

○ I don't know.

	AGE 13	
RESP	1969	1972
1*	73.4	71.3
2	2.7	3.4
3	0.6	1.2
4	2.4	2.8
5	19.1	19.2
IDK	1.6	2.1

72-73 Rpt. #: RU226
69-70 Rpt. #: U759

NAEP #: 204097

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	06-16
69-70 Package-Exercise:	04-11

Timing: (in seconds)

RU226	Stimulus:	22
RU226	Response:	13
RU226	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	4.5	-9.6	2.8	1.2	6.5	-6.2	-29.9	6.3
	1972	5.1	-4.5	6.1	-7.9	3.6	-3.3	-27.0	4.5

Of 929 plants, 705 had red flowers and 224 had white flowers. The ratio of red to white flowers is about

○ 700:1

○ 4:1

● 3:1

○ 2:1

○ 1:480

○ I don't know.

	AGE 13	
RESP	1969	1972
1	5.0	7.8
2	16.2	16.8
3*	47.0	42.8
4	5.8	6.0
5	7.4	6.9
IDK	18.2	19.2

72-73 Rpt. #: RP227
69-70 Rpt. #: U754

NAEP #: 204100

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	03-27
69-70 Package-Exercise:	09-09

Timing: (in seconds)

RP227	Stimulus:	16
RP227	Response:	19
RP227	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	8.0	-6.9	-0.6	-1.6	1.8	-1.7	-24.8	5.8
	1972	8.8	-8.6	2.3	-3.5	1.0	-1.0	-25.4	5.4

To determine the average height of 13-year-olds, it would be most important to have a large number of

○ scales.

○ yardsticks.

● 13-year-olds.

○ people doing the measuring.

○ observers of each measurement.

○ I don't know.

	AGE 13	
RESP	1969	1972
1	5.9	8.2
2	7.3	9.7
·3*	63.0	59.0
4	6.2	4.7
5	13.6	11.2
IDK	3.8	3.5

72-73 Rpt. #: RU228
69-70 Rpt. #: U858

NAEP #: 204102

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	06-10
69-70 Package-Exercise:	02-06

Timing: (in seconds)

RU228	Stimulus:	34
RU228	Response:	44
RU228	Grand total:	88

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	4.3	-8.6	-2.3	4.5	3.5	-3.1	-19.2	2.0
	1973	2.9	-3.9	2.1	-2.6	1.7	-1.5	-18.0	3.6

Which of the following is a model rather than an observation?

- ● The center of the Earth is liquid.
- ○ A ship can start from a point, sail around the Earth, and return to the same point.
- ○ The temperature at the bottom of a very deep well is higher than the temperature at the surface.
- ○ The average temperature of the South Pole is lower than the average temperature at the Tropic of Capricorn.
- ○ The top of the sail is the last portion of a ship that can be seen from the shore as the ship sails away from the shore.

- ○ I don't know.

	AGE 17	
RESP	1969	1973
1*	56.2	50.2
2	11.9	15.6
3	6.0	6.0
4	6.7	4.8
5	8.4	11.5
IDK	10.5	11.6

72-73 Rpt. [illegible]: RU229
69-70 Rpt. #: U855

NAEP #: 204103

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	17
72-73 Package-Exercise:	08-29
69-70 Package-Exercise:	04-02

Timing: (in seconds)

RU229	Stimulus:	27
RU229	Response:	22
RU229	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	3.1	-7.4	2.7	-1.3	3.8	-3.6	-23.2	4.7
	1973	4.4	-3.5	0.0	-1.6	4.7	-4.3	-16.0	3.6

Four of the following are statements of fact. Which statement is a hypothesis?

○ The boiling point of water is 100° C.

○ A gallon of water weighs about 8 pounds.

○ Hydrogen was first prepared by Cavendish in 1766.

○ The Empire State Building is more than 50 stories high.

● The rings of Saturn were formed from a moon that exploded.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	7.4	5.4
2	11.8	12.4
3	4.1	3.2
4	3.8	3.0
5*	66.3	61.3
IDK	6.4	12.5

72-73 Rpt. #: RP230
69-70 Rpt. #: U853

NAEP #: 204105

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

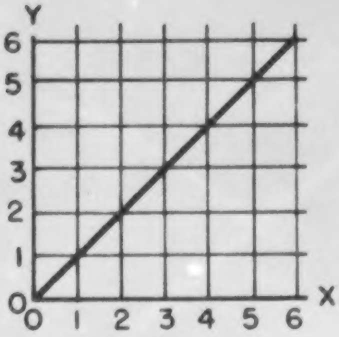
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 09-15
69-70 Package-Exercise: 06-14

Timing: (in seconds)
RP230 Stimulus: 19
RP230 Response: 44
RP230 Grand total: 74

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	3.7	-5.1	1.0	-1.7	2.4	-2.4	-18.6	2.1
	1973	4.5	-4.3	-1.2	0.4	2.2	-2.0	-12.8	2.4

Which of the following equations represents the graph below?



● $Y = X$

○ $Y = aX^2$

○ $Y = 2X$

○ $YX = 1$

○ $X^2 + Y^2 = 1$

○ I don't know.

	AGE 17	
RESP	1969	1973
1*	73.4	70.8
2	1.3	1.4
3	1.8	0.8
4	3.0	3.0
5	5.2	4.5
IDK	14.6	19.3

72-73 Rpt. #: RP231
69-70 Rpt. #: U864

NAEP #: 204106

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

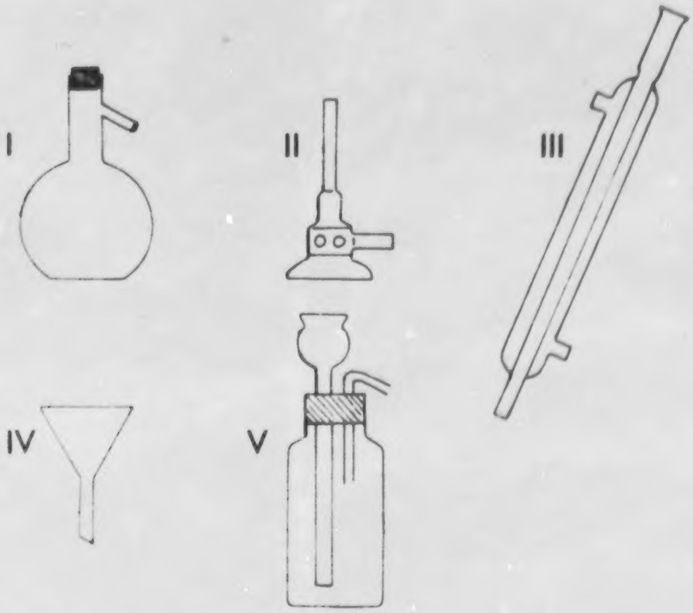
Age:	17
72-73 Package-Exercise:	08-13
69-70 Package-Exercise:	07-02

Timing: (in seconds)

RP231	Stimulus:	20
RP231	Response:	29
RP231	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	4.4	-1.4	-3.3	0.4	11.0	-10.5	-6.9	0.6
	1973	0.4	0.1	-0.7	0.3	7.0	-6.5	-10.7	1.5

Pictured below are pieces of laboratory equipment.



To obtain pure water from salt water, which of the pieces shown above would be most useful?

○ II and V

○ III and V

● I, II, and III

○ I, IV, and V

○ III, IV, and V

○ I don't know.

	AGE 17	
RESP	1969	1973
1	18.3	23.3
2	13.5	13.9
3*	26.1	20.5
4	11.7	13.4
5	7.8	9.7
IDK	22.6	18.4

72-73 Rpt. #: RP250
69-70 Rpt. #: U881

NAEP #: 204109

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type:	Short answer
Scoring Type:	Professional
Administration Mode:	Individual

Age:	17
72-73 Package-Exercise:	04-29
69-70 Package-Exercise:	09-20

Timing: (in seconds)

RP250	Stimulus:	9
RP250	Response:	477
RP250	Grand total:	486

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-2.8	-4.1	4.9	-0.6	7.2	-6.5	-25.6	4.3
	1973	1.7	-8.2	-2.4	7.9	5.0	-5.1	-25.3	4.1

29. Describe a way to test whether it pays to buy premium gasoline for a second-hand car.

	AGE 17	
RESP	1969	1973
1*	49.0	35.0
2	45.5	51.3
IDK	2.1	9.7

For the Scoring Guide used in 1969 and 1973, see Appendix, page 299.

72-73 Rpt. #: RB232
69-70 Rpt. #: R347

NAEP #: 204111

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

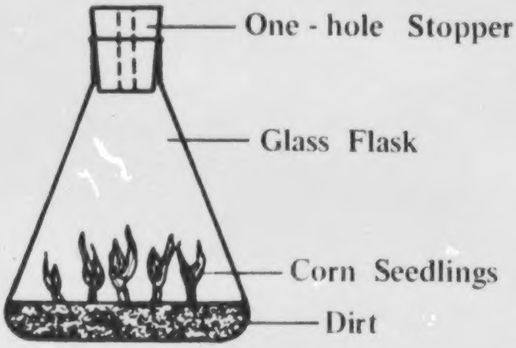
Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 07-08
69-70 Package-Exercise: 11-03

Timing: (in seconds)
RB232 Stimulus: 39
RB232 Response: 24
RB232 Grand total: 74

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	4.0	-2.8	0.4	-2.6	2.2	-2.1	-9.8	1.5
	1973	1.2	-3.1	1.5	-0.4	2.3	-2.0	-7.0	1.4

Corn is planted in a flask as shown below. The flask is weighed each day for three weeks. The flask shows a daily weight loss. Which of the following is the best explanation of this loss of weight?



○ The original water evaporates within the first day.

○ Carbon dioxide is lighter in weight than ordinary air.

○ Seed material is changed to leaves and roots that weigh less.

● The seedlings use starch in the seeds and give off gases that escape.

○ Dry air enters through the stopper and replaces the moist air in the flask.

○ I don't know.

	AGE 17	
RESP	1969	1973
1	16.2	19.2
2	11.5	14.6
3	7.7	12.0
4*	19.6	20.0
5	15.4	19.2
IDK	29.4	14.7

72-73 Rpt. #: RU233
69-70 Rpt. #: U676

NAEP #: 204113

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	01-25
69-70 Package-Exercise:	04-08

Timing: (in seconds)

RU233	Stimulus:	30
RU233	Response:	19
RU233	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	6.9	-2.8	-3.8	-0.1	-0.1	0.2	-11.4	2.4
	1973	2.2	-5.5	2.3	0.3	-0.8	0.8	-13.6	3.5

Some children were trying to find out which of three light bulbs was brightest. The children said the following things. Which of these gives the best start toward finding the answer?

○ One bulb looks brightest to me so I already know the answer.

○ All the bulbs look bright to me so there can't be an answer.

● It would help if we had a way to find the brightness of a light bulb.

○ Let's take a vote; each person will vote for the bulb he thinks is the brightest.

○ I don't know.

AGE 9

RESP	1970	1973
1	14.8	8.4
2	12.1	14.2
3*	41.7	37.2
4	25.6	28.9
IDK	5.6	10.4

72-73 Rpt. #: RP234
69-70 Rpt. #: R146

NAEP #: 204124

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 01-06
69-70 Package-Exercise: 02-01

Timing: (in seconds)
RP234 Stimulus: 24
RP234 Response: 25
RP234 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	5.4	-9.2	4.1	-3.6	1.9	-2.2	-18.8	4.5
	1973	1.6	-4.0	2.3	-0.5	2.3	-2.3	-19.4	4.6

John has a flat tire on his bicycle. He pumps the tire up with an air pump and begins to ride. In a few minutes the tire is flat again. To fix his tire, John must find

○ a better air pump.

○ whether the tire is made of rubber.

● where the air leaks out of the tire.

○ how many minutes it takes the tire to go flat.

○ I don't know.

AGE 9

RESP	1970	1973
1	14.1	5.9
2	3.0	2.2
3*	75.7	87.8
4	2.7	2.2
IDK	3.8	1.7

72-73 Rpt. #: RB235
69-70 Rpt. #: R148

NAEP #: 204128

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 9
72-73 Package-Exercise: 06-20
69-70 Package-Exercise: 07-13

Timing: (in seconds)
RB235 Stimulus: 27
RB235 Response: 22
RB235 Grand total: 60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	5.6	-1.0	-3.2	-1.6	-2.1	2.2	-11.7	2.3
	1973	0.8	-6.0	3.5	1.3	-1.8	1.9	-14.1	3.5

A doctor kept records of breathing rates of people when they were resting. He made the chart below.

BREATHING RATES

Person	Breaths in a minute
Baby boys	38
7-yr.-old girls	25
7-yr.-old boys	25
10-yr.-old boys	20
Mothers	16

The chart suggests that

○ boys breathe faster than girls.

○ girls breathe faster than boys.

○ older people breathe faster than younger people.

● younger people breathe faster than older people.

○ I don't know.

AGE 9

RESP	1970	1973
1	11.5	12.0
2	1.5	1.8
3	13.2	14.3
4*	67.0	66.2
IDK	6.6	5.4

72-73 Rpt. #: RB236
69-70 Rpt. #: R133

NAEP #: 204137

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: D. Understand and apply inquiry skills.

69-70 Obj: II. POSSESS THE ABILITIES AND SKILLS NEEDED TO ENGAGE IN THE PROCESSES OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	01-23
69-70 Package-Exercise:	02-15

Timing: (in seconds)

RB236	Stimulus:	37
RB236	Response:	13
RB236	Grand total:	61

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	6.2	-11.2	3.4	-1.8	2.4	-2.8	-11.1	2.6
	1973	5.4	-6.2	0.8	-0.8	0.3	-0.3	-8.4	2.7

Tom wanted to find out whether plants can grow better in the dark or in the light. He put a pot with 6 radish seeds in a dark room and a pot with 6 bean seeds on the window sill.

-dark
radish seeds

-light
bean seeds

He added the same amount of water to both pots. The bean seeds grew better than the radish seeds, so Tom said his plants grow best in the light.

To be able to say this, he should have

- ○ watered both pots more.
- ○ watered the radish seeds more.
- ● put the same kind of seeds in both pots.
- ○ grown the seeds in water instead of soil.

- ○ I don't know.

	AGE 9	
RESP	1970	1973
1	12.6	11.3
2	15.5	17.4
3*	46.2	41.5
4	10.6	12.3
IDK	15.0	16.4

72-73 Rpt. #: RU237
69-70 Rpt. #: U675

NAEP #: 205016

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	07-04
69-70 Package-Exercise:	01-12

Timing: (in seconds)

RU237	Stimulus:	10
RU237	Response:	39
RU237	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	1.1	-4.6	4.2	-2.3	-2.1	2.4	-26.9	7.0
	1973	6.3	-6.6	1.5	-2.3	-0.3	0.3	-22.8	5.6

Which of the following is a scientist NOT likely to do while he is at work?

○ Think

○ Read books

● Sell tickets

○ Plan experiments

○ I don't know.

	AGE 9	
RESP	1970	1973
1	4.9	4.2
2	8.1	8.0
3*	75.1	70.3
4	9.7	12.5
IDK	1.9	4.3

72-73 Rpt. #: RU238
69-70 Rpt. #: R157, R242

NAEP #: 205018

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9	13
72-73 Package-Exercise:	04-12	02-24
69-70 Package-Exercise:	06-03	02-01

Timing: (in seconds)

RU238	Stimulus:	16	17
RU238	Response:	33	18
RU238	Grand total:	60	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-1.0	-2.4	3.0	-0.7	0.8	-0.8	-14.5	3.2
	1973	3.4	-5.4	2.7	-1.5	0.5	-0.4	-18.3	4.2
13	1969	4.0	-8.4	0.2	2.6	0.8	-0.6	-22.3	4.9
	1972	2.4	-3.2	1.4	-1.0	0.7	-0.7	-24.6	5.9

Scientists would have most trouble testing which of these?

○ I have a fever.

○ I weigh 101 pounds.

○ I am 62 inches tall.

○ I can lift a 20-pound box.

● My dog is better than your dog.

○ I don't know.

	AGE 9		AGE 13	
RESP	1970	1973	1969	1972
1	11.5	16.2	6.4	7.8
2	6.6	8.3	4.1	5.3
3	13.8	13.5	1.7	1.3
4	13.1	11.6	7.9	5.4
5*	39.4	40.5	72.5	74.5
IDK	15.2	9.4	7.2	5.6

72-73 Rpt. #: RU239
69-70 Rpt. #: U769

NAEP #: 205021

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.
Subobjective: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	03-02
69-70 Package-Exercise:	03-09

Timing: (in seconds)

RU239	Stimulus:	26
RU239	Response:	9
RU239	Grand total:	46

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-2.9	-1.0	0.9	2.9	-2.2	1.9	-2.2	0.3
	1972	1.1	-2.0	1.7	-1.2	-3.2	2.9	-3.6	0.8

When a scientist takes many measurements during an experiment and studies the results carefully, what is he probably doing?

- ○ Changing a theory into a law
- ○ Changing a law into a theory
- ○ Making work for a computer to prevent its being idle
- ○ Trying to correct a mistake he has made in arithmetic
- ● Seeking for relationships among the measurements he has obtained

- ○ I don't know.

	AGE 13	
RESP	1969	1972
1	14.9	12.5
2	2.0	3.6
3	2.4	2.8
4	4.3	7.5
5*	66.6	62.1
IDK	9.6	11.3

72-73 Rpt. #: RU240
69-70 Rpt. #: R159

NAEP #: 205027

72-73 Obj: II. UNDERSTAND AND APPLY THE FUNDAMENTAL ASPECTS OF SCIENCE IN A WIDE RANGE OF PROBLEM SITUATIONS.

Subobjective: E. Understand and apply the scientific enterprise.

69-70 Obj: III. UNDERSTAND THE INVESTIGATIVE NATURE OF SCIENCE.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

	9
Age:	
72-73 Package-Exercise:	01-17
69-70 Package-Exercise:	05-12

Timing: (in seconds)

RU240	Stimulus:	14
RU240	Response:	35
RU240	Grand total:	60

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	-1.6	-4.9	3.8	1.2	-0.5	0.5	-13.1	3.3
	1973	2.3	-5.1	-1.1	3.3	-0.2	0.2	-11.3	2.1

In science one is LEAST likely to do which of the following things with an apple?

○ Weigh it
○ Measure its size
○ Describe its color
● Write a poem about it
○ Find how many seeds it has

○ I don't know.

	AGE 9	
RESP	1970	1973
1	15.9	21.0
2	10.2	11.0
3	11.0	9.7
4*	23.0	18.7
5	30.7	29.0
IDK	9.0	10.2

72-73 Rpt. #: RU268
69-70 Rpt. #: U780

NAEP #: 301009

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

Subobjective: B. Appreciate inquiry skills.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus hand
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	05-29
69-70 Package-Exercise:	04-17

Timing: (in seconds)

RU268	Part A Stimulus:	8
RU268	Response:	6
RU268	Total:	14
RU268	Part B Stimulus:	10
RU268	Response:	90
RU268	Total:	100
RU268	Grand total:	114

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.9	2.2	1.2	-2.1	6.5	-6.1	0.1	0.8
	1973	-1.6	0.6	2.0	-1.5	5.7	-5.7	-2.1	0.6

29. A. Do you find science topics interesting?

○ Often

○ Sometimes

○ Never

B. If so, what kind of topics?

AGE 13

RESP	1969	1972
1*	24.2	19.8
2	68.1	69.3
3	6.9	9.1

NOTE: Because of the differences in the scoring procedures used in the two assessments, change data for the open-ended part of this exercise is not being released.

For the 1972 Scoring Guide to Part B, see Appendix, page 308.

72-73 Rpt. #: RU241
69-70 Rpt. #: U774

NAEP #: 301010

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

Subobjective: A. Appreciate facts and simple concepts, laws (principles), and conceptual schemes.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus hand
Administration Mode: Individual

Age:	13
72-73 Package-Exercise:	12-07
69-70 Package-Exercise:	13-09

Timing: (in seconds)

RU241	Stimulus:	*
RU241	Response:	*
RU241	Grand total:	*

*Time not limited by paced tape.

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	1.2	4.3	-3.0	-1.2	6.4	-6.9	0.1	0.0
	1972	-1.3	2.3	0.1	-0.9	1.6	-1.5	4.6	-0.7

A. Outside of school, how often do you read stories or articles about science or scientists; often, sometimes, or never?

● Often (Go to B)
○ Sometimes (Go to B)
○ Never (End the exercise)

B. What have you read most recently?

____
____
____
____
____
____

NOTE: Because of the differences in the scoring procedures used in the two assessments, change data for the open-ended part of this exercise is not being released.

For the 1972 Scoring Guide to Part B, see Appendix, page 310.

	AGE 13	
RESP	1969	1972
1*	19.0	11.4
2	64.3	60.3
3	16.7	28.3

72-73 Rpt. #: RU242
69-70 Rpt. #: U869

NAEP #: 301011

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

Subobjective: A. Appreciate facts and simple concepts, laws (principles), and conceptual schemes.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus hand
Administration Mode: Group

Age:	17
72-73 Package-Exercise:	01-07
69-70 Package-Exercise:	05-17

Timing: (in seconds)

RU242	Part A Stimulus:	7
RU242	Response:	6
RU242	Total:	13
RU242	Part B Stimulus:	7
RU242	Response:	98
RU242	Total:	105
RU242	Grand total:	118

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	3.2	-0.9	-1.5	-0.5	3.8	-4.0	-2.1	0.5
	1973	0.2	0.6	-0.7	-0.0	2.8	-2.8	-2.4	0.2

A. Do you read science articles in magazines?

● Often

○ Sometimes

○ Never

	AGE 17	
RESP	1969	1973
1*	9.2	8.0
2	68.9	59.6
3	21.8	32.3

B. If so, what article have you read most recently?

NOTE: Because of the differences in the scoring procedures used in the two assessments, change data for the open-ended part of this exercise is not being released.

For the 1973 Scoring Guide to Part B, see Appendix, page 312.

72-73 Rpt. #: RB243
69-70 Rpt. #: U686

NAEP #: 302014

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

Subobjective: B. Appreciate inquiry skills.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Individual

Age: 9
72-73 Package-Exercise: 10-01
69-70 Package-Exercise: 11-13

Timing: (in seconds)
RB243 Stimulus: *
RB243 Response: *
RB243 Grand total: *

*Time not limited by paced tape.

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.5	-5.2	3.4	-2.5	2.3	-2.3	-7.6	1.8
	1973	-0.5	0.1	-0.1	0.6	2.2	-2.0	-7.6	1.7

How often have you watched bees, squirrels, birds, or other animals to see what they eat or where they live; often, sometimes, or never?

● Often
○ Sometimes
○ Never

AGE 9

RESP	1970	1973
1*	43.8	32.8
2	53.1	53.8
3	3.0	13.4

72-73 Rpt. #: RB244
69-70 Rpt. #: U771

NAEP #: 302015

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
Subobjective: B. Appreciate inquiry skills.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	02-20
69-70 Package-Exercise:	09-15

Timing: (in seconds)

RB244	Stimulus:	10
RB244	Response:	10
RB244	Grand total:	30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	-0.5	-2.3	1.5	1.0	-0.8	1.1	-6.6	1.4
	1972	0.2	-2.0	1.8	-0.6	-1.2	1.2	-6.2	1.3

Planting seeds and finding out how fast they grow could be a science experiment.

● I believe this statement.

○ I don't believe this statement.

○ I don't know.

	AGE 13	
RESP	1969	1972
1*	93.4	93.5
2	5.4	4.9
IDK	1.1	1.4

72-73 Rpt. #: RU245
69-70 Rpt. #: U684

NAEP #: 303085

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
Subobjective: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	9
72-73 Package-Exercise:	05-34
69-70 Package-Exercise:	04-16

Timing: (in seconds)

RU245	Stimulus:	6
RU245	Response:	9
RU245	Grand total:	25

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	4.7	-8.8	-1.7	4.1	0.6	-0.5	-11.6	3.1
	1973	2.0	-3.7	1.2	0.4	0.4	-0.4	-14.1	3.4

Do you think that all scientists wear uniforms?

○ Yes

● No

○ I don't know.

	AGE 9	
RESP	1970	1973
1	34.4	28.3
2*	62.5	68.7
IDK	3.0	2.9

72-73 Rpt. #: RU246
69-70 Rpt. #: U682

NAEP #: 303087

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

Subobjective: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type:	Multiple choice
Scoring Type:	Machine
Administration Mode:	Group

Age:	9
72-73 Package-Exercise:	06-01
69-70 Package-Exercise:	06-17

Timing: (in seconds)

RU246	Stimulus:	5
RU246	Response:	15
RU246	Grand total:	30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
9	1970	2.5	-6.8	3.0	-0.4	2.4	-2.5	-21.0	4.4
	1973	4.0	-8.8	4.3	-0.6	2.4	-2.5	-20.3	4.5

Do you think that breaking a mirror brings bad luck?

○ Yes

● No

○ I don't know.

AGE 9

RESP	1970	1973
1	25.6	26.1
2*	72.0	70.3
IDK	1.9	3.4

72-73 Rpt. #: RU247
69-70 Rpt. #: U773

NAEP #: 303089

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

Subobjective: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age: 13
72-73 Package-Exercise: 04-25
69-70 Package-Exercise: 01-07

Timing: (in seconds)
RU247 Stimulus: 7
RU247 Response: 13
RU247 Grand total: 31

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	4.7	-12.0	5.4	-1.9	3.5	-3.7	-14.6	3.9
	1972	9.3	-10.0	4.9	-6.4	3.3	-3.5	-16.4	4.9

Most scientists today are working on space projects.

○ I believe this statement.

● I don't believe this statement.

○ I don't know.

AGE 13

RESP	1969	1972
1	59.3	49.2
2*	37.9	44.8
IDK	2.9	4.1

72-73 Rpt. #: RU258
69-70 Rpt. #: U775

NAEP #: 303090

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.

Subobjective: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice
Scoring Type: Machine
Administration Mode: Group

Age:	13
72-73 Package-Exercise:	07-16
69-70 Package-Exercise:	03-18

Timing: (in seconds)

RU258	Part A Stimulus:	14
RU258	Response:	6
RU258	Total:	20
RU258	Part B Stimulus:	11
RU258	Response:	90
RU258	Total:	101
RU258	Grand total:	121

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
13	1969	1.8	-0.6	0.8	-2.4	2.3	-2.1	0.2	0.0
	1972	-1.3	0.4	0.8	0.1	2.6	-2.6	-2.3	0.6

A. Have you done science experiments outside of school, such as those suggested in a chemistry or microscope set?

● Often
○ Sometimes
○ Never

B. If so, what experiment have you done most recently?

	AGE 13	
RESP	1969	1972
1*	5.3	5.1
2	40.0	40.7
3	54.3	54.1

NOTE: Because of the differences in the scoring procedures used in the two assessments, change data for the open-ended part of this exercise is not being released.

For the 1972 Scoring Guide to Part B, see Appendix, page 313.

72-73 Rpt. #: RU248
69-70 Rpt. #: U870

NAEP #: 303092

72-73 Obj: III. APPRECIATE THE KNOWLEDGE AND PROCESSES OF SCIENCE, THE CONSEQUENCES AND LIMITATIONS OF SCIENCE, AND THE PERSONAL AND SOCIAL RELEVANCE OF SCIENCE AND TECHNOLOGY IN OUR SOCIETY.
Subobjective: C. Appreciate the scientific enterprise.

69-70 Obj: IV. HAVE ATTITUDES ABOUT AND APPRECIATIONS OF SCIENTISTS, SCIENCE, AND THE CONSEQUENCES OF SCIENCE THAT STEM FROM ADEQUATE UNDERSTANDINGS.

Exercise Type: Multiple choice plus short answer
Scoring Type: Machine plus hand
Administration Mode: Group

Age: 17
72-73 Package-Exercise: 04-07
69-70 Package-Exercise: 10-14

Timing: (in seconds)

RU248	Part A Stimulus:	8
RU248	Response:	5
RU248	Total:	13
RU248	Part B Stimulus:	8
RU248	Response:	9
RU248	Total:	17
RU248	Grand total:	30

		REGION				SEX		COLOR	
AGE	YEAR	NE	SE	C	W	M	F	B	W
17	1969	-0.5	3.1	-0.7	-0.8	2.1	-2.0	1.8	-0.2
	1973	-1.8	2.0	-1.5	2.4	1.8	-1.9	4.1	-0.7

A. Do you read books about science or scientists?

● Often

○ Sometimes

○ Never

B. If so, what book have you read most recently?

____

	AGE 17	
RESP	1969	1973
1*	5.4	5.8
2	45.6	46.0
3	48.6	47.9

NOTE: Because of the differences in the scoring procedures used in the two assessments, change data for the open-ended part of this exercise is not being released.

For the 1973 Scoring Guide to Part B, see Appendix, page 316.

APPENDIX

Scoring Guides for Open-Ended Exercises

Notes on the Use of National Assessment Science Scoring Guides

The National Assessment of Educational Progress (NAEP) categorizes responses to open-ended questions according to a very simple scheme. Responses to most open-ended questions are given a two-digit score. Acceptable responses are categorized in the teens; up to 10 categories (10-19) are possible. Unacceptable responses are scored in the 20s. When more than 10 acceptable or unacceptable categories are anticipated, three-digit codes are used. In that case, 100s are acceptable; 200s are unacceptable. When only the simplest scheme is needed, one digit suffices. In this case, acceptable responses are 1s; unacceptable responses are 2s.

If an ordering of acceptability is possible with two- or three-digit codes, lower numbers in the teens or 100s are more acceptable than higher numbers. This ordering is often rather arbitrary and sometimes breaks down. For example, once scoring is under way, we occasionally find a highly acceptable response and make a new category following the old ones, that is, with a larger number. Unacceptable responses generally are not ordered. A "no response" is coded 0, 00 or 000. "I don't know" is coded 9, 39 or 399.

Acceptability of responses is not absolutely fixed. The scoring guides were reviewed by science experts whose comments were incorporated in the present versions of the guides. If the need arises, we can treat as unacceptable any category in the teens or as acceptable any in the 20s, although we are a bit hesitant to make drastic changes after scoring.

Examples under the categories are taken from actual sample responses. The original spelling and phrasing of the responses have been retained to illustrate the variety of the written responses.

Exercise 204109

Describe a way to test whether it pays to buy premium gasoline for a second-hand car.

00 = no response

First Column of Ovals

Experimental Ideas

1. Measure compression or compression ratio.
2. Look for damage to motor: damage in combustion chamber (spark plug life, valves, etc.)
3. Check performance: engine starting, acceleration, spark plug detonation (ping, knock)
4. Measure mileage
5. Check engine characteristics: size, number of cylinders, etc. (except compression)
6. Other tests

Nonexperimental Tests

7. Ask someone or look it up (car dealer, mechanic, manual, previous owner)
8. Expresses opinion without mentioning or inferring test.

9 = Other responses

(I don't know = 99)

Second Column of Ovals

Quality of Response

1. High-quality answer including cost factors.
   - Mentions test
   - Tells how to test it
   - Mentions controlling conditions in mileage
   - Relates results to cost
2. High-quality answer but no discussion of cost factors.

   (Same as #1 without cost.)
3. Correct answer but incomplete, including cost factors.
4. Correct answer but incomplete, does not consider cost.
5. Very incomplete answer. Mentions idea only with no detail.

   Ex: "Check the mileage."
   "Check the performance of your car with regular."
   "Check the size of the motor."
   "See if regular gasoline damages your motor."
6. Some parts of answer incorrect or confused.
7. Nonsense or no information (ex. NR)

Exercise 204109 (cont.)

NOTE: After scoring the exercise using the two-column method as outlined on the previous page, the following changes were made to the category numbers, making a three-digit category system.

00 changed to 000 (no response)

Acceptable

11-14 changed to 101-104

21-24 changed to 105-108

31-34 changed to 109-112

41-44 changed to 113-116

71-74 changed to 117-120

Unacceptable

15-17 changed to 250-252

25-27 changed to 253-255

35-37 changed to 256-258

45-47 changed to 259-261

51-57 changed to 262-268

61-67 changed to 269-275

75-77 changed to 276-278

81-87 changed to 279-285

91-97 changed to 286-292

99 changed to 399

The following examples of responses are based on the original two-digit category system.

High-Quality Response (category 1 or 2)

Compression: Check the compression of your motor. To do this you take out the spark plug and insert a compression gauge in one of the openings. Turn on the starter and read the gauge.

Measure the compression ratio of the engine. This could be done by measuring the volume of a cylinder at the bottom and the top of its stroke and taking the ratio.

Damage to motor: This response will probably never occur.

Performance: If it knocks when you accelerate (or go up a hill) with regular in the tank, but not with premium, you should use premium gas.

Mileage: Fill your car with a tank of premium gas and see how many miles you go on it. Then fill your car with a tank of regular and check how many miles you get. Be sure to do the same kind of driving in each case (highway or in-town).

Try equal amounts of regular and premium gasoline (for example, 1 gallon) in your car and see how far you can go before you run out. You have to do the same kind of driving in each case.

Engine characteristics: Will probably never occur.

Correct Answer but Incomplete (category 3 or 4)

Compression: Check the compression. If it is high, it takes premium gasoline.

Measure compression.

Measure the compression ratio of the car.

Damage to motor: Look for damage to the valves when you use regular.

Performance: See if it knocks with regular.

If it knocks when you're going up a hill when you have regular in the tank, you should use premium.

Exercise 204109 (cont.)

Mileage: Check the mileage with regular and with premium and compare.

Fill your tank with regular and measure the mileage. Then fill your car with a tank of premium and measure the mileage.

Engine characteristics: Check size of the motor. If it is V-8 it probably takes premium, if it is a 6 cylinder it probably takes regular.

Some Parts of Answer Incorrect or Confused (category 6)

Damage to motor: See if premium damages your engine. If so, use regular.

Performance: See if it runs good with premium.

Mileage: Take two cars. Put premium in one and regular in the other. See which gets the best mileage.

Engine characteristics: Check the type of motor in your car. V-8's always take premium and 6 cylinders take regular.

Additional Examples

1 = Measure compression or compression ratio

12 Take a compression tester and check how high compression each cylinder has by pulling the plugs and cranking the engine 10 times. If the guage reads a high level it would be best to use premium gas if its a bomb burn anything.

2 = Look for damage to motor: damage in combustion chamber (spark plug life, valves, etc.)

24 You can tell by whether the spark plugs get gummed up on either kind. It really won't hurt a car for a while so you can try both kinds. When you put in regular and it clogs up the spark plugs you need to use premium.

25 You could read owners manual whether or not you could use high octane. You could ask a competent

mechanic whether or not it is plausible. You could tear the engine apart and look at the valves, rings, and pistons, and see if they are carboned up and then determine if they need to be using a higher octane in order to burn cleaner and more effeciently.

3 = Check performance: engine starting, acceleration, spark plug detonation (ping, knock)

31
1. Use all the gas in the car.
2. Fill the tank with premium gas.
3. Drive the car & measure its performance in terms of miles driven/gal, pinging, acceleration, ease of starting, etc.
4. Repeat steps 2 & 3 until performance is well known, i.e., until performance measurements are consistent.
5. Repeat steps 1 thru 4 with a lower grade of gas.
6. Compare the measured performances & decide if there is an increased performance with premium that justifies its cost. If, for example, miles/gal is the only measure compare the cost of driving a mile in both cases & choose the gas with the lower operating cost.

32 Put regular gasoline in the car and take it out for a run. If on fairly hard pulls it "pings" with a slight valve noise and doesn't seem to have all the power it should, try premium gasoline. If under the same circumstances, there is no "ping" with the premium gas, it would pay to buy the premium.

34 From my point of view the only way to test which kind of gasoline to use is try each one of them for a while. Have a check up after running each kind of gas for a certain amount of time. If the car runs smother and better with premium I would suggest that. If the car runs approx. the same I would suggest burning regular.

34 First fill your tank with reg. gasoline & ride in it, then fill your tank with premium gasoline & compare the performances. If the pick up & sound of engine & smoothness is ride changes at all you will know if it pays or not.

Exercise 204109 (cont.)

35 First, I'd try at least a gallon, than I would drive and see how the milage is good on it. I'd see if it made the engine run better or smoother, and if everything went find I'd try more.

35 Try the premium to see if your car's performance is better.

36 Go and buy the premium gas and put it in second hand car and see how it runs.

4 = Measure mileage

41 By finding how far the car will go on one kind of gasoline per gal. and then finding how far it goes on premium gasoline under the same conditions. Then find the price per mile for each. Just to be sure that premium is cheaper this test should be tried for several different kinds of gasoline.

42 Fill up the car with premium gasoline and take down the mileage on the what the car registers at that time. Then drive the car until it reaches empty and take down this mileage on what the car registers. Subtract the first mileage from the second mileage and you find how far it took you. Then fill the car with another type of gas and repeat this procedure. Compare the files travelled with premium gas with the miles travelled with another type of gas. Which ever gasoline took you further is the gas to buy. But driving conditions for each type of gasoline must be the same.

43 Start out with an empty tank, check the miles on your car, and go fill it up with premium. When it runs out, figure out how many miles you got to the gallon. Do the same with regular gasoline. If you get slightly more with premium, figure out how much money it cost you to go a set distance with premium, then with regular. It might be cheaper to buy regular even though you don't get quite as many miles.

44 Buy premium gas and take the average mileage on a 1/2 of tank. Then buy another type of gas and take the average milage on a 1/2 of tank. The one with the highest average is the most economical.

Exercise 204109 (cont.)

44 I would buy a full tank of premium gas and watch my mileage for that tank. I would then buy regular gas and do the same. If I found that I got many more miles per gallon for premium gas, I would buy it. But if there wasn't much difference I would use regular.

44 Put premium gas in the used car and check milage against non premium.

45 See how many miles you get to the gallon.

45 I would ask the past owner what type of gas he used. It is best to use the same type usually. If there wasn't anyway of finding out what the past type was I would experiment to see if I got good mileage & a clean engine. Also, if I got engine trouble I could guess that it's maybe the premium gas, or not.

46 Keep track of how much the gas costs and how many miles you get per gallon. Compare this to another car that is second - hand in pretty much the same condition that is running on regular and compare the two.

5 = Check engine characteristics: size, number of cylinders, etc. (except compression)

55 It depends on what type of engine & size of engine involved whether it would be suficient or profitable to use a premium gas.

55 Depending on type of car and how the carbrator is set for the car to run best.

56 This would depend on the size of the engine and how much equipment is run by the engine. Normally a car would perform better and longer with premium gas which costs more - but in the long run would possibly save on repairs.

56 It would depend on the size of the engine and how worn the engine is.

6 = Other tests

65 Try each of the gasoline in the car which one sounds and rides the best in the one.

Exercise 204109 (cont.)

65 Fill it up with regular and push the gas pedal to the floor.

67 By testing it on your own car and by buying a second-hand car similar to your first, you can determine how the premium you is going to work.

67 If smoke comes from the tail pipe you do not need premium gasoline because it is running too rich.

7 = Ask someone or look it up (car dealer, mechanic, manual, previous owner)

74 Check with the manufacturer to learn the compression ratio of the engine. This will determine whether a higher octane gas is required.

75 Find out what the person who owned it first used.

77 Call up the company and ask.

8 = Express opinion without mentioning or inferring test

86 I pays to buy a premium gasoline for a second hand car because it needs it. You shouldn't buy the most expensive. The car is not worth it.

86 Your car will be in better conditions. It will run smoother and last longer. But it also depends if the second-hand car is running in good conditions. People often say that premium is better than regular gasoline.

86 It will make a cheap car run better.

86 Premium gas is better for any kind of car.

87 I think it does pay to buy premium gasoline for a second-hand car, because it may be in good condition that it might need maybe a more expensive gas.

87 Because if a car is used, than it should be given a gas that would make it run better. When a car has been taken more miles that new

Exercise 204109 (cont.)

one and you need more power to keep the used car going for a new car you want it to get used to running. Premium goes is good for a used car because it has more natural elements in it that the other gases.

9 = Other responses

99	I'm sorry but I didn't understand the last question. Because there are some words I don't know and the meaning is hard to understand for me.
99	I have no idea.

99 = I don't know.

Exercise 301009

A. Do you find science topics interesting?

B. If so, what kind of topics?

00 = no response

Acceptable

10 = Astronomy
When there to do with the stars and the moon.

About Space or Planets About Ecology About Air.

The solar System, stars, environment.

About the rotation of planets.

11 = Space exploration
About what they have learned about in space and under the sea.

12 = Geology; rocks; earth science; oceanography (except life forms); weather
When studying about rock, living things, how they get their food.

Earth Science (some of it) prehistoric times (dinosaurs, etc.).

13 = Biology; cells; microorganisms; plants; animals
Topics about reptiles.

Study frogs and other kinds of animal.

Life Science, Earth Science, Science on the Sea (goes with the 1st one).

Studying animals and doing experiments with chemicals.

Biology, Zoology sometimes Earth science, Oceanography. Maybe Chemistry.

14 = Human body; medicine; disease
Topics on the living body & parts ocean life animal life.

Mostly things that have to do with the human body and life it's self and things that have to do with human reproduction and the course of life.

Exercise 301009 (cont.)

15 = Evolution; genetics; archaeology; fossils
Prehistoric topics fossils rocks atoms.

Topics on prehistoric finds like fossils and bones, and things in ice. Also things having to do with animals of all kinds.

Dinosaurs.

16 = Chemistry; physics; electricity; mechanics
Machines, or simple machines.

Chemicals, and animals.

Electrons, Electricity, Sound, molecules, light.

17 = Science fiction; new discoveries; things in the future
Interesting Topics such as Science Fiction STORIES OR shows.

Topics were you can find interesting information and more modern updated topics which scientist are working on now.

18 = About scientists; historical scientific events
No examples

19 = Other acceptable: environment; pollution
Such as - the tings that are going on in the world today - over population, polution and so on.

Metric System Weighing stuff and I don't like other stuff either.

Unacceptable

20 = Unacceptable
Well something of science of the world.

ABOUT THE WAY WE LIVE.

Experiments.

39 = I don't know

Exercise 301010

A. Outside of school, how often do you read stories or articles about science or scientists; often, sometimes or never?

B. What have you read most recently?

00 = no response

Acceptable

10 = Space exploration and astronomy
    Popular Science - Moon landing.

    About solar system - sun and stars.

11 = Geology
    Articles on rocks and minerals.

    Why the Mole (sic) Hole.

12 = Weather
    About hurricanes.

    About how you make rain, clouds and stuff in jars.

13 = Animals and plant life
    Article on insects.

    Looked up the hermit crab in the encyclopedia.

14 = Medicine and drugs
    Heart transplant.

    About drugs people take.

15 = Weapons, cars, machines, mechanical inventions
    About building a mechanical nose.

    The jet and how it works.

    New vehicles - Honda 750.

16 = Chemistry
    ...and chemistry in the encyclopedia.

17 = Science fiction

18 = About scientists and their lives

19 = Other acceptable

Exercise 301010 (cont.)

Unacceptable

20 = Names a general science magazine or general book (only).
Popular Science.

21 = Other unacceptable

39 = I don't know.

Exercise 301011

A. How often do you read science articles in magazines?

B. What article have you read most recently:

00 = No response

Acceptable

10 = Astronomy; space exploration

11 = Environment; ecology; pollution; overpopulation

12 = Geology; rocks; earth science; oceanography (ex. life forms); weather

13 = Biology; cells; microorganisms; plants; animals

14 = Human body; medicine; disease; reproduction (human); nutrition

15 = Evolution; genetics; archaeology; fossils

16 = Chemistry; physics; electricity; mechanics

17 = Science fiction; new discoveries; things in the future

18 = About scientists; historical scientific events

19 = Other acceptable

Unacceptable

20 = Sociology; psychology (considered acceptable by some consultants)

21 = Economics; other math topics

22 = Technical manuals (if article described is acceptable, code under an acceptable category)

23 = Gives source but not description of article

24 = (not used)

25 = Other unacceptable

39 = I don't know.

Exercise 303090

A. Have you done science experiments outside of school, such as those suggested in a chemistry or microscope set?

B. If so, what experiment have you done most recently?

00 = no response; have done none recently.

Acceptable

10 = Experiments with pure chemicals alone
Made a little fire cracker with a chemistry set.

Mixing iron filings and sulfer.

We have experimented with sulfer.

See how sulfer burns.

Burnt sugar in a spoon under a candle.

Making hydrogen with zinc and Hydro-cloric Acid.

We did a stick and smoke bomb.

11 = Experiments with chemicals and something else
Rubberized egg with vinegar.

See if things are acid or base.

Put bacon in acid and see what happens.

12 = Electrical experiments
Tested battery cells.

Electrical conduction of metals.

Hydrolysis of water.

13 = Experiments demonstrating physical principles
I saw if the mass of ice and water were different, just because they have a different volume. It wasn't. Also fooled with the microscope at home.

Finding if salt in water affects it's freezing point.

I tried an experiment to show how friction can be reduced.

Making an egg go into a pop bottle by a match.

Exercise 303090 (cont.)

In chemistry set they gave me a rocket. I filled the rocket with Alka-Seltzer and water. The pressure building inside the rocket made it shoot upward.

14 = Geological, weather or astronomy experiments

Study the locations of stars at different times of the year.

Look at the moon and stars and at Jupiter through a telescope.

We did a baloon to see what the temperature would be.

Made erosion happen.

15 = Examination of life forms, examination of non-living things

I examined a sample of blood through a microscope.

I looked at a lot of slides through microscopes. I disected a few frogs.

Look at pond water with a microscope.

Look at what a bee stinger looks like through a microscope.

Put bugs in a box and let them all live together and see how many babys they have.

Used plaster of paris and made different kinds of fossils.

16 = Experiments on plants and animals

Tested growth of plants in sun and in the dark, with food and without food.

Effect of heat on seeds.

Tested alcoholic effect on chick embryos.

17 = Other acceptable

Doing a test about thermal pollution around the city.

Unacceptable

20 = Vague reference to a science experiment

Rock experiment.

About mice.

I found a fossil once.

The environment.

About one cell animals.

21 = Other unacceptable

I've mixed milk, marshmellows, cocoa and coconut to see how it tastes - a food experiment.

In school, we went outside of school and searched for many types of insects.

Surveying spring creek park in Science.

39 = I don't know.

Exercise 303092

A. How often do you read books about science or scientists?

B. What book about science or scientists have you read most recently?

00 = no response

Acceptable

10 = Astronomy; space exploration

11 = Environment; ecology; pollution; overpopulation

12 = Geology; earth science; weather; oceanography (excluding life forms)

13 = Biology; cells; microorganisms; plants; animals

14 = Human body; medicine; disease; reproduction (human); nutrition

15 = Evolution; genetics; archaeology; fossils

16 = Chemistry; physics; electricity; mechanics

17 = Science fiction; new discoveries; things in the future

18 = About scientists; historical scientific events

19 = Other acceptable (Scorers: Do not use this category any more than necessary)
Includes general science textbooks.

Unacceptable

20 = Sociology; psychology (considered acceptable by some consultants)

21 = Economics; other math topics

22 = Technical manuals -- if the one mentioned is not acceptable.

23 = Names a science article in either a magazine or general reference book

24 - Names a science reference book: Merck Index, Handbook of Physics and Chemistry, etc.

Exercise 303092 (cont.)

25 = Other unacceptable

39 = I don't know.

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